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Philosophical Problems in Sense Perception: Testing the Limits of Aristotelianism

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Editors

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 Springer

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We dedicate this volume to Dionysus, the greatest among ancient and living gods.

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Abbreviations of Aristotle's Works

<i>APo.</i>	<i>Analytica Posteriora</i>
<i>Cat.</i>	<i>Categoriae</i>
<i>de An.</i>	<i>de Anima</i>
<i>Div.Somn</i>	<i>de Divinatione per Somnia</i>
<i>EN</i>	<i>Ethica Nicomachea</i>
<i>GA</i>	<i>de Generatione Animalium</i>
<i>GC</i>	<i>de Generatione et Corruptione</i>
<i>HA</i>	<i>Historia Animalium</i>
<i>Insomn.</i>	<i>de Insomniis</i>
<i>Int.</i>	<i>de Interpretatione</i>
<i>MA</i>	<i>de Motu Animalium</i>
<i>Mem.</i>	<i>de Memoria</i>
<i>Metaph.</i>	<i>Metaphysica</i>
<i>Mete.</i>	<i>Meteorologica</i>
<i>PA</i>	<i>de Partibus Animalium</i>
<i>Ph.</i>	<i>Physica</i>
<i>Rh.</i>	<i>Rhetorica</i>
<i>Sens.</i>	<i>de Sensu et Sensato</i>
<i>Somn.Vig.</i>	<i>de Somno et Vigilia</i>
<i>Top.</i>	<i>Topica</i>

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Chapter 1

Introduction



David Bennett and Juhana Toivanen

1.1 Introduction

Aristotle's theory of perception influenced subsequent generations of philosophers almost two millenia. It was discussed by thinkers from radically different cultural and linguistic backgrounds, but in a certain sense all these authors were parts of one and the same philosophical tradition: the Aristotelian one. The present volume brings together thirteen essays that aim to illuminate this tradition from several angles. The guiding principle behind all the essays is that despite its explanatory power, Aristotle's theory of perception entails a number of philosophically intriguing problems. Past philosophers were quick to recognise these problems, and often they ended up stretching the limits of the received theory in their endeavour to explain how human (and nonhuman animal) cognitive processes take place.

Philosophers of the Aristotelian tradition were broadly interested in epistemological and psychological aspects of cognitive processes, but perception was usually considered as an important starting point. Not that all authors in the tradition would have been empiricists, but even those who based human knowledge on some higher principles usually admitted that perception is a necessary part of the process by which we come to know reality. Moreover, theories of perception offered a platform

The authors are in alphabetical order and both are main authors. This goes also for the editorial work.

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for scrutinising several metaphysical questions ranging from the relation between mind and body to the nature of the objects of cognition (external objects or internal representations), and from the relation between material changes of the body and cognitive states of the soul to the very nature of consciousness itself, and everything in between. This is why theories of perception matter: they tell how we relate to the world around us, how our knowledge comes about, and what we are (as cognisers).

This is also why problems in theories of perception matter. To borrow the famous idea from another context, a small mistake at the beginning is a great one at the end,¹ so it is good to get the details of one's theory of perception right, before tackling more complex epistemological and psychological issues. Looking at the history of philosophy, one cannot avoid noticing that astonishingly many philosophers have thought that Aristotle got those details right. Or almost right. For there are also astonishingly many philosophers who have, in principle, accepted his theory of perception but at the same time noticed that there are certain philosophical problems in it.

The present volume focuses on these problems. Some of the chapters discuss Aristotle and propose solutions to the difficulties that an interpreter of his view faces; others investigate the subsequent reception of his theory of perception and the various problems that philosophers have found in it. The volume also reveals various ways in which past philosophers have tried to improve the theory—either by explicitly addressing issues that Aristotle left open, by defending certain interpretations of his theory instead of others, or by developing the theory further so as to answer the problems and shortcomings that have been attached to it throughout the centuries.

The result, we hope, is a rich and engaging account of attempts to provide a philosophically sound explanation of sense perception. Although modern science has challenged certain fundamental presuppositions of Aristotelian theories of perception, these attempts still contain important philosophical insights. Even when the historical theories are considered obsolete when it comes to mechanisms of sense perception, they always afford us a framework by which we may scrutinise problems that are still relevant. The ideas that they offer are historically speaking old, but they are in many ways philosophically fresh, as they may be used to open new perspectives to contemporary views.

¹“Quia parvus error in principio magnus est in fine [...]” (Thomas Aquinas, *De ente et essentia*, 369a1–2; cf. Aristotle, *Cael.* 1.5, 271b8–13).

1.2 Aristotle's Theory of Perception: The Basics and the Problems

The basic principles of Aristotle's theory of perception have been explained in scholarly literature sufficiently well, and although many aspects of it remain controversial, there is no need to revisit it in detail here.² However, the essays included in this collection require some familiarity with Aristotle's approach, and therefore a truncated version of its key elements is likely to be useful.

Aristotle understands perception in terms of his general theory of change. The soul has a potency (or power) to perceive, which is divided into five sense modalities: sight, hearing, smell, taste, and touch. When an external object or its perceptible qualities act upon the external senses, the potency to perceive is actualised, and the perceiving subject becomes aware of the corresponding quality. In addition to the external senses, Aristotle elaborates on a number of other cognitive functions that pertain to sensible qualities of external objects. One of these he calls the *koinē aisthēsis*, the "common sense," which is a power that unifies the information that we receive via the five external senses. Another important power is called *phantasia*, "imagination." Although not directly a perceptual power, it belongs to the sensory (part of the) soul and is related in several ways to the contents of our perception and to the way these contents figure in higher-order cognitive processes and what might be called "post-sensory" processes, such as dreaming. Aristotle also discusses different types of memory, but its precise role in perception remains largely at the margins of his analysis.

By using the machinery provided by these powers of the soul, Aristotle is able to analyse in a philosophically detailed manner both the mechanism of sense perception (in its different modalities) and various psychological phenomena that are part and parcel of contemporary philosophy of perception. He considers sight as the model for all the senses, offering an analysis of how it functions and provides information about the external world.³ The other four external senses are treated more cursorily—a fact that made room for further developments by later philosophers.⁴ In addition to the basics, Aristotle focuses on several more complex cognitive operations, such as the so-called binding problem (i.e., how the information from five different sense modalities gets united into one perceptual experience), higher order perception, and perceptual discrimination.

Although the general approach in Aristotle's theory is rather straightforward, it entails several intriguing problems and open questions. The most well-known of these problems concerns the nature of the change that brings about sense perception: does it involve a material change of the organ, is it equal to such a change, or

²For discussion concerning the details, see, e.g. Caston 2005; Gregoric 2007; Knuuttila 2008; Marmodoro 2014; Sorabji 1974.

³*De An.* 2.7; *Sens.* 1–3.

⁴For instance, medieval Latin authors asked if touch is one or several senses, and they defended different theories concerning the object of touch. See Yrjönsuuri 2008.

should it be understood in some other way? According to the so-called primitive or fundamental literal interpretation,⁵ the sense organs literally become like the sensible quality that affects them—as the stock example has it, the eye-jelly turns red when we see a red object. By contrast, the so-called spiritualist reading is based on the idea that the change that brings about sense perception is different in comparison to a material change, and that it should be understood as a spiritual or intentional change that does not (primarily) alter the quality of the organ. Instead, it actualises the cognitive power.⁶ The dispute over the correct interpretation of Aristotle has been partially exegetical, but it has also managed to enrich contemporary philosophical discussion by offering a third option between reductive naturalism and a dualist conception of the mind and its functions.⁷ Thus, it is a good example of the way in which philosophical problems in and around Aristotle's theory of perception contribute to contemporary philosophical discussions.

There are a host of other problems that have been raised in scholarly literature. Some of them have been embedded in the philosophical tradition that stems from Aristotle's works from the very beginning. Aristotle himself occasionally points out complications related to his own view, and sometimes he does so in such a way that his final answer remains sufficiently ambiguous as to leave room for further discussions. Many other problems are raised by later philosophers, who have found Aristotle's theory problematic or lacking in certain respects. For instance, the common sense (*koinē aisthēsis*) can be understood either as a distinct power in addition to the external senses or as a unified perceptual capacity that comprises all five sense modalities taken together, and it is unclear which reading is more faithful to Aristotle—or, more importantly, which reading explains our cognitive processes better. Another good example is the possibility of perceiving several things at the same time, which Aristotle raises in chapter seven of his *De sensu et sensato*: he acknowledges that we have this capacity, but his explanation for it is difficult in many respects. Yet another issue concerns the role of paying attention as a condition for consciously perceiving things around us. These problems and the disputes surrounding them are well-documented in earlier scholarship, and the chapters in the present volume will shed additional light to them, so we will spare the reader from an excessive list of their kin. Instead, let us briefly focus on the three linguistic traditions that the chapters in this volume explore.

⁵Caston 2005: 250–51. For instance, Burnyeat (1992) and Johansen (1997: 250–80) reject the material change altogether.

⁶Caston 2005 offers a comprehensive view of the different positions on this topic. For an additional approach characterised as “strong hylomorphism,” see Charles 2009, with Caston's response appended.

⁷The literature on this topic is voluminous; one may begin with the contributions in Nussbaum and Rorty (eds) 1992.

1.3 Aristotelian Tradition or Traditions?

We mentioned above that this volume covers discussions from the Aristotelian tradition. However, the contributions pertain to ancient Greek philosophy, medieval Arabic philosophy, and medieval Latin philosophy, and one might ask if these three constitute a unified tradition in any meaningful sense. Would it not be better to speak about traditions (in plural)? It is reasonable to ask what justifies speaking of one tradition instead of many; but it is equally reasonable to adopt the contrary perspective and ask in what respects the linguistic and cultural differences can be considered to distinguish several traditions.

We do not deny that there are good reasons to claim that the contributions in this volume represent research into more than one tradition. The connections between the Greek, the Arabic, and the Latin linguistic traditions were established via translations of the key texts, but they all developed independently of each other for long periods; they did not each receive all of the important works from the other traditions, and many discussions remained internal to them. The set of Aristotelian treatises known as the *Parva naturalia*, beginning with the *De sensu*, for example, was transmitted into Arabic in a highly irregular adaptation, leading to several startling mutations in the tradition.⁸ Developments in medicine and the natural sciences profoundly impacted the Arabic and Hebrew reception of Aristotle's theory of perception.⁹ Likewise, Latin medieval authors had only haphazard knowledge of Plato's works, ancient Stoic material, and the Arabic tradition. Whereas Averroes' works were translated and became part of the Latin tradition, they were generally ignored in the Islamic world outside of Andalusia; even there, the extensive Hebrew reception of Averroes' philosophy was barely noticed by Latin scholars. Moreover, Latin medieval philosophers were influenced by Christian theology, which did not exert any comparable influence on medieval Arabic authors. Even though these influences may be most strongly felt in certain other areas of philosophy, philosophy of mind and theories of perception were not immune to them.

Cultural and linguistic distinctions, religious preoccupations, scientific developments, and historical chance all contributed to the unique evolution of the traditions we today call "Greek, Arabic, and Latin." Although it is striking that authors from such various backgrounds could continue to profess Aristotelianism as their philosophical allegiance or heritage, the name meant different things to different authors. This process began with the Neoplatonic commentators. What we call Aristotelianism may differ significantly from what past authors called Aristotelianism; indeed, it is somewhat unclear that the term is used in one precise meaning even today.

For example, Averroes, taking the Arabic *Parva naturalia* to be genuinely Aristotelian (although it is in fact a significant distortion: for instance, the Arabic version asserted the veridical nature of dreams), was at pains to associate each sense capacity to a particular sensible elemental property: water, for the eye; air, for the

⁸ See Hansberger 2010.

⁹ On the medical tradition, see Adamson and Pormann 2017.

ear; and the “smoky-fiery” elemental property, for the nose. Combining this “Aristotelian” doctrine (in *De sensu et sensato* 5, 443a22–24, Aristotle attributes it to Heraclitus) to what was then known in medical science, he supposed that “objects of smell therefore can heal the brain, due to its coldness [as juxtaposed with] the heat of the smoky part smelled.”¹⁰ Thus claims about aromatherapy were naturalised as Aristotelianism in the twelfth century.

The most important reason to question the unity of the tradition, however, is that there are significant *philosophical* differences between Aristotle and his followers. In the most extreme cases, the general appreciation of Aristotle and admiration of his philosophical acuity led philosophers to draw support from the old master even in cases where the connection to his views was meagre, or even nonexistent. Especially in the Latin tradition, appealing to Aristotle’s views and claiming that one’s own view can be justified on Aristotelian grounds was a norm rather than an exception—one might say that philosophers wanted to identify themselves as Aristotelians even when they strictly speaking were not.

It may be worth noting that if we start to distinguish traditions on the basis of these and other similar criteria, we may end up having way more traditions than the three linguistic ones: after all, each philosopher had their own “Aristotle.” If the criterion for belonging to a tradition is a strict doctrinal similarity, no original philosopher can ever belong to any tradition.

Yet, there are also good reasons to think that the three (or more) traditions are in fact branches that spring from one root. Even more strongly, there are reasons to think that these form one tradition that is not divided into branches. Different views are defended, and not every view influences later discussions. But it is a well-established fact that Latin philosophers were heavily affected by Arabic philosophers, not only in their interpretations of Aristotle, but in their philosophical views more generally. One example is the perspectivist theory, which influenced Latin authors via translations from Arabic. Although it can be considered to be a deviation from the Aristotelian tradition, it is equally reasonable to say that it is a development of it: certain fundamental elements of Aristotle’s theory are preserved in it, and there is no question that it depends on his philosophical innovations in many ways.

Ultimately it comes down to the definition of ‘tradition.’ It is a flexible term that can be used in a broad sense (and then it includes everything) or in a narrower sense (and then it can be used to focus on a more narrow part of the more general tradition). We do not intend to fix the scope here. But we want to point out that using the term in different ways serves different purposes. Our purpose here is to emphasise the unity and interrelatedness of philosophical discussions concerning perception and the problems that emerge when intelligent people use much of their energy to think about perception, and in particular, when they do so largely on the basis of a shared corpus of philosophical works.

This corpus begins with Aristotle’s *De anima* and *De sensu et sensato*, but the tradition is strengthened by internal influences: Aristotle’s impact on other ancient

¹⁰ Averroes, *Talkhīṣ Kitāb al-Ḥiss*, 8.10–13.

authors; his indirect influence, through these authors, upon Arabic and Latin philosophy; the influence that Arabic philosophy exercised on Latin discussions via translations; and of course the internal influences within Arabic and Latin discussions themselves; etc. This dynamic cross-fertilisation is crucial for a *living* tradition. It undeniably leads to doctrinal differences, but it also keeps the discussion relevant. Distinguishing a full-fledged Aristotelian from a philosopher happy to adopt only a few aspects of the tradition may be useful when analysing finer details that separate one author from another, but at the same time the unifying elements should not be forgotten.

Finally, one criterion that may not be the most important but affects the picture anyway: a sociological criterion. If authors themselves thought that they are doing Aristotelian philosophy, then we have one more reason to think that they belong to an Aristotelian tradition. As it turns out, applying this criterion to premodern authors is not so straightforward, because philosophers who followed Aristotle did not necessarily have to emphasise that they were Aristotelians. Why? Because there were no clear alternatives. After the philosophical schools of antiquity had been closed, and before the serious criticism of the Aristotelianism of the schoolmen (scholastics), philosophers thought that they were doing *philosophy*, not *Aristotelian* philosophy. Again, this does not mean that all thinkers would have been equally content with all facets of Aristotle's philosophy; one way to read the history of philosophy—and the history of theories of perception—is to focus on elements that slowly grow out of a tradition and go beyond it. Indeed, it is possible to find thinkers from all periods who do not want to follow in Aristotle's footsteps and who explicitly criticised others for doing so. And it is precisely in these cases that we can see how the 'tradition' starts to turn into a plural.

The bottom line is that 'tradition' is a theoretical concept that serves a purpose. The historical story looks different depending on the way it is understood: we may want to emphasise the fundamental unity between philosophical discussions over time and place, and the concept of tradition is a useful tool for doing that. Or we may want to focus on differences and talk about breaks in the tradition or different traditions. Our hope is that the present volume allows the reader to see both sides of the story and to reflect upon both the similarities and the differences.

1.4 After Aristotle

It goes without saying that discussions concerning sense perception in Greek antiquity did not end with Aristotle. The topic was discussed by many authors with varying outlooks. Just to mention a few: Alexander of Aphrodisias, Philoponus, and Themistius defended and developed theories that are in many ways indebted to Aristotle, while Galen, Plotinus, and many Stoics can be said to be further removed from his framework. Ancient authors tackled many problems that go to the heart of Aristotle's theory. They discussed the precise mechanism by which sense perception takes place, focusing especially on the physiology of perception as well as on

the nature of the alteration that the sense organs undergo in perception. Likewise, various issues concerning the general hylomorphic framework of Aristotle's theory were debated, and many authors focused on the conceptual dimension of perception. Some suggested that perception should be understood as a rational judgement instead of as a purely sensory process. The active nature of perception and the idea that the soul needs to pay attention before it can perceive was taken to the fore, due to Platonist influences. And so forth.¹¹ Many of these questions continued to vex later Arabic and Latin philosophers, and some of them are still discussed today in one form or another (not only as exegetical problems but as ones that are relevant to contemporary theories of perception).

The titanic figures of classical Arabic philosophy—al-Kindī (d. 870), al-Fārābī (d. 950), and Ibn Sīnā (Avicenna, d. 1037)—inherited the Aristotelian theories relevant to sense perception in the context of a great transmission of Greek thought into the Arabic language in the ninth and tenth centuries.¹² The translations of this material established a cottage industry in Peripatetic philosophy; since the raw material included Neoplatonic commentaries and original texts, participants were driven to integrative, harmonising measures to make sense of it. Moreover, the entire tradition was recast by the immense philosophical project of Avicenna, such that it became, in a very real sense, “Avicennan” philosophy from the eleventh century onward.¹³ Although Avicenna's psychology was justly more influential due to his refinement of faculty psychology and cognitive theory, we shall see from several chapters in this volume that the fundamental Aristotelian positions on sense perception continued to require explication.

The “Peripatetic/Avicennan” strain of Arabic philosophy was nestled, sometimes rather uncomfortably, with indigenous Islamic cosmological thought on the one side, and rapidly advancing practical scientific and medical expertise on the other. The former, enshrined in scholarly imagination as *kalām* (literally, “discourse”), included highly sophisticated atomist theories of sense perception, whereby sensible properties, as accidents, penetrated (or were penetrated by) the perceiving spirit according to painstakingly detailed physical rules.¹⁴ Often *kalām* disputes would begin with distinctly theological problems, such as whether God could be seen, or whether God could make us perceive non-sensible realities. The latter—“scientific”—movement, embodied most famously by figures such as Ibn al-Haytham (Alhacen/Alhazen in the Latin tradition), was a continuous source for innovation, particularly in optics and medicine.¹⁵

Finally, Aristotle's works had an immense influence on Latin theories of perception. Psychological issues were discussed before the reception of Aristotle and

¹¹ Useful summaries are, e.g., Tuominen 2014 and Caston 2005. See also the collection of translated material in Sorabji 2005: 33–60.

¹² On this historical moment, see Gutas 1998.

¹³ The famous exception is Ibn Rushd (Averroes, d. 1198), who notoriously tried to peel back the layers of Avicennism to get to the Aristotelian fruit concealed within it.

¹⁴ The most enthusiastic account of *kalām* theories is to be found in Wolfson 1976.

¹⁵ See the introduction in Sabra 1989; Adamson and Pormann 2017.

Arabic scientific and philosophical works mainly in the context of monastic literature, in which otherworldly vision of God had a paramount role in comparison to normal vision. After the arrival of Latin translations, philosophers took their basic views from Aristotle. However, there were at least three other sources that formed the framework of their discussions: Avicenna, the so-called perspectivists—a term that referred to Arabic optical theories, especially to the work of Alhazen (Ibn al-Haytham)—and Augustine. Especially the last two sets of sources offered ideas that differ significantly from Aristotle’s theory, and the endeavour to harmonise different approaches with each other and with other philosophical commitments led to interesting new openings. In particular, bringing the science of optics of light and vision into contact with Aristotelian premises helped Latin authors to formulate their theories in radically different ways, and to focus on aspects that were underdeveloped or completely absent in Aristotle’s works.¹⁶ Likewise, Augustine’s theologically loaded conception of the active nature of the soul—itsself inspired by Neoplatonist views of late antiquity—led some philosophers to turn the Aristotelian theory of perception on its head: it is not the object that acts upon the powers of the soul, but rather the soul actively reaches to the external world and grasps what is there.¹⁷

In sum, philosophers who were familiar with Aristotle’s works were strongly influenced by them. However, they were usually quite eager to elaborate on various aspects of the theory that they found in Aristotle, and they did not hesitate to offer their own solutions to various problems when needed. Their interventions were motivated by the sources they used in addition to Aristotle, by cultural differences (always catalysts for intellectual progress), and by their own creative minds. All these are exemplified in the contributions to the present volume, as described briefly below.

1.5 Brief Description of the Contents of This Volume

As already mentioned, this anthology focuses on philosophical problems concerning sense perception in the history of philosophy. Each of the thirteen essays tackles a particular problem that tests the limits of Aristotle’s theory of perception and develops it in new directions. Most of the essays come in pairs: an essay written by one specialist is coupled with another essay that tackles the same topic from a different angle. This arrangement serves to broaden the philosophical issue analysed in one essay, to extend the investigation to related authors, and in general to give the reader a possibility to reflect on the topic from new perspectives. Although the essays are independent and can be read individually, it is our conviction that reading the essays in connection to each other will be fruitful. This, we hope, applies to the volume as a whole and not only to the paired papers.

¹⁶ Lindberg 1976.

¹⁷ See, e.g., Silva and Toivanen 2010; Silva and Yrjönsuuri 2014.

Victor Caston's contribution is a penetrating sequel to his ground-breaking 2005 work, "The Spirit and the Letter: Aristotle on Perception." Intentionality, for Aristotle, is a natural phenomenon. In discussing perception as a natural change in *De anima* 2.12, he describes it as a process of receiving form without matter. This has commanded the attention of scholars, leading to the aforementioned opposition between spiritualist and literalist readings (as well as many more nuanced variations), which sought to settle what Aristotle meant when he explained that sense powers receive forms without matter. In this essay, Caston argues that the change entailed by perception is rather a transduction of information. This analysis allows us to take Aristotle's intentionality as a non-magical process; rather, perception involves information transposed into a different key. Aristotle's use of the seal analogy is most evocative in this reading, guaranteeing the authority and veracity of sense-impressions while allowing for error, attributed to the faculty of *phantasia*.

Todd Ganson's contribution focuses on a contrast between two different ways of understanding the nature of perception in Aristotle's theory. On the one hand, perception can be considered similar to belief because it takes a stand on how things are in the external world. Like belief, perception is representational, and it can be evaluated in terms of accuracy and veridicality. On the other hand, perception can be taken to be 'presentational', that is, it is simply a matter of being presented or acquainted with items in the environment. Ganson calls attention to contexts in which Aristotle seems to favour the former view.

Mark Eli Kalderon's companion piece to Ganson continues the debate concerning Aristotle's theory of perception. In particular, Kalderon critically evaluates Ganson's proposal that perception is assimilated to rational thinking in several ways, and he argues that perception does not contain intentional or representational content. The two papers form a comprehensive whole that lays out two possible and equally interesting interpretations of the material.

Filip Radovic investigates the sense behind a bizarre example introduced by Aristotle in the *De insomniis*: namely, that when a menstruating woman looks at a mirror, it is stained red. In his scientific works on human and animal behaviour, Aristotle does not invoke such outrageous superstitious beliefs, and his theory of perception does not seem to endorse reciprocal change of this sort anyway. Radovic uses this as a case study in Aristotle's use of examples as pedagogical tools, and examines its value as evidence in the literalist/spiritualist debate.

Attila Hangai explores Alexander of Aphrodisias' resolution of the problem of simultaneous perception; the problem was recognised by Aristotle, who identified the criteria for a solution. Hangai argues that Alexander's interpretive intervention in the Aristotelian discussion of the topic led to an ingenious, and quite Aristotelian, solution. By emphasising the role of judgment, Alexander is shown to have reset the inquiry into simultaneous perception.

Elisa Coda argues in her contribution that Themistius (d. 388) provides in his paraphrase of the *De anima* an account of Aristotle's doctrine of common sense that combines Alexander of Aphrodisias and Plotinus. The Aristotelian *koinē aisthēsis* is interpreted as the unifying power of an incorporeal pneuma that receives the information from the senses, the messengers of the soul. On the basis of this Plotinian

tenet, Themistius describes the *koinē aisthēsis* as a spiritual power that unifies diverse and even opposite sensorial inputs, and discriminates between them. This interpretation of *koinē aisthēsis* was influential in subsequent Greek works on the *De anima* from late Antiquity (pseudo-Philoponus) to the Byzantine times (Sophonias) and inspired Avicenna.

Jari Kaukua addresses two questions related to Themistius' alleged influence on Avicenna's theory of the common sense. The first question concerns the phenomenon of incidental perception, which Themistius explained by means of the common sense. For Avicenna, on the contrary, the explanation of cases such as our perceiving something yellow as honey involves the faculty of estimation and the entire system of the internal senses that he coined, and this results in an analysis that is considerably more complex than Themistius'. The second question concerns Themistius' claim according to which an incorporeal spirit is the primary subject of perception. Kaukua argues that Avicenna departs from such a view both because for him, spirit is a corporeal substance, and because he insists that the subject of all cognition is the soul itself, not any of its faculties. Finally, he concludes by briefly considering other, more general ways in which Themistius could have influenced Avicenna's psychology.

Laura Hassan introduces readers to the complications brought out by theologians in the aftermath of Avicenna's synthesis of Peripatetic and Neoplatonic philosophy. Taking the case of the Ash'arite theologian Sayf al-Dīn al-Āmidī (d. 1233), who was well versed in Avicennan philosophy but ultimately committed to the sophisticated late Ash'arism of Fakhr al-Dīn al-Rāzī (another subtle reader of Avicenna), Hassan shows how discussions of the process of vision reveal the stakes and intricacies of the reception of Aristotelian theory in the later Arabic tradition. Aristotle's analysis of sense perception had been reworked successively over the centuries, with new interpretations emerging in canonical commentaries; such innovations had a far-reaching influence, conditioning the development of Arabic philosophy in Avicenna and beyond. As Hassan demonstrates, medieval Ash'arite theologians such as al-Āmidī engaged with their philosophical opponents and therefore, by extension, with the received Aristotelian tradition as filtered through the prism of Avicenna. Al-Āmidī's delicate balancing of Peripatetic and theological accounts of the processes of vision demonstrates the long shadow of a particularly Aristotelian mode of inquiry into the mechanisms of sense perception.

Jon McGinnis' contribution discusses further the topic raised by Hassan. He provides additional context concerning medieval Islamic theories of vision and suggests that al-Āmidī's apparent about-face from a philosophical approach to a theological one may be less doctrinally motivated than an indication of a more general methodological tendency among late classical and post-classical thinkers in the Islamic world.

Aurélien Robert focuses on John of Jandun's (1280–1328) theory of perception and provides new insight into the well-known dispute over the relation between physical changes and mental acts in the Aristotelian theory of perception. Robert shows that Jandun was much indebted to Alexander of Aphrodisias. He also

addresses perception as a relational and qualitative change, and argues that Jandun emphasised that the mind is not passive but actively engages in perceptual process.

Sten Ebbesen expands on the possible sources of Jandun's view. He delves deeper into Alexander of Aphrodisias' explanation of the relational nature of perception, and his detailed analysis of certain key passages in Jandun and in his contemporary Radulphus Brito shows that there is a close connection between these two authors. Ebbesen's contribution includes a critical edition of a question from Brito's commentary on *De sensu* which has hitherto been available only in manuscript form, and which is a probable source for the relevant question in Jandun's commentary.

Christophe Grellard examines Nichole Oresme's (c. 1320–82) theory of perception, and focuses especially on the problem of perceptual error. Grellard shows that Oresme's view is deeply influenced by both the Avicennian and Perspectivist traditions, and that his solution is based on the idea that perception takes place when the internal sense makes a judgement and quasi-reasoning (*discursus*). The role of habits and attention in the process of perception and in the production of perceptual errors receives a detailed analysis at the hands of Grellard, who also links Oresme's theory with modern constructivist psychology.

Finally, José Filipe Silva expands on Grellard's analysis by providing complementary evidence for the active model of perception in Oresme. Further, Silva shows that influences on his model go beyond Avicenna and the perspectivist tradition in geometrical optics. The roots of this general approach to perception can be traced to Augustine, who inspired several medieval philosophers in their critical engagement with Aristotle's theory and those aspects they found lacking in it. In particular, the idea that perception can take place only if the perceiving subject pays attention to things in her surroundings was used to underline certain aspects of cognitive psychology and phenomenology of perception. Silva connects this idea to the possibility of error in perceptual processes in a way that illuminates this crucial aspect of medieval Latin theories of perception.

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Chapter 2

Aristotle on the Transmission of Information: Receiving Form Without the Matter



Victor Caston

Abstract At the beginning of *De anima* 2.12, Aristotle compares perception to the way sealing wax is imprinted by signet rings to explain how the senses receive form “without the matter.” A close reading shows that the passage concerns the way information is transmitted through causal interactions, specifically through a kind of transduction. Unlike other causal interactions where the form is embodied in what is affected, replicating the agent’s active quality, the wax does not become a signet, nor do the senses become colored, flavored, and so on. Rather they receive the form in question by embodying and replicating certain features that are essential to the active quality, specifically the ratios Aristotle thinks define perceptible qualities, and thereby receive information about the perceptible object. This distinctive natural and material process explains the authority of perception: the senses receive the identifying marks of objects and thus bear the “seal of reality.”

2.1 Introduction

Much of what has been put forward as evidence of Aristotle’s concept of intentionality is nothing of the sort. Brentano and others standardly rely on five doctrines from his theory of perception and understanding:

- (i) Every psychological activity has an object (*de An.* 2.4).
- (ii) In cognition, we become like the object (*de An.* 2.5; cf. 3.4).

The following paper was started in 2004 and read widely, but never published, apart from a brief sketch in §§4.1 and 4.3 of Caston 2005. I have incorporated material from the latter, significantly revised and expanded here.

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- (iii) The activity of the object is “one and the same” as the activity of cognition and present in the subject (*de An.* 3.2).
- (iv) Cognition is not an ordinary alteration (*de An.* 2.5).
- (v) In cognition, the form is received without the matter (*de An.* 2.12; cf. 3.4).

Coming after Brentano, as we do, it is all too easy to hear familiar theses about intentionality in these doctrines, especially the first four. The first sounds like the thesis that every mental state is *of* or *about* something; the second, that something in us is somehow similar, or even *isomorphic*, to the object of our mental state; the third, that the object of cognition, as an object of cognition, is *immanent* in the activity of cognition and is essential to its identity; and the fourth, that intentional states *cannot* be accounted for *naturalistically*—that no material or physical event exhibits intentionality.

If we view these doctrines in their original context, however, it is clear that this impression is mistaken. Most of these doctrines do not even come close to having the right extension for expressing a concept of intentionality.

The first four doctrines are all instances of broader generalizations that are meant to hold for nonintentional as well as intentional states. They are causal doctrines that apply to agent-patient interactions quite widely, including noncognitive and inanimate ones. In Aristotle’s view, (i) holds not only for cognition, but digestion. The likeness at issue in (ii) is something he thinks is found in *every* agent-patient interaction whatsoever. The patient undergoing change always comes to be like the agent’s active quality, as result of its action. (iii) likewise applies universally to such interactions. Aristotle believes the activity of *every* agent is “one and the same” as the activity of the patient and present in it. (iv) extends beyond cognition as well. It turns on the difference between two kinds of causal power, namely, passive powers that are exhausted or used up when they are exercised—for Aristotle alterations in an ordinary sense—and those where the power is preserved or even strengthened by the activity, like building or digestion. These four doctrines cannot, then, serve as a mark of the intentional. None of them individually constitutes a sufficient condition for intentionality, or even all of them jointly, since they all apply to digestion.

Still less does any of them offer a necessary condition of intentionality, including (v). This is due, once again, to their causal nature. Any intentional state to which these doctrines apply would be *about its immediate cause*—it will be about what brings it about. But for many intentional states, content and cause diverge, for the simple reason that what these states are about has never existed or been the case, and so cannot be a cause. The content of such states cannot be explained by any simple causal account, whereas a mental state is about its immediate cause. Aristotle recognizes this and because of it introduces a distinct new faculty he calls *phantasia*, which plays a central role in his account of intentionality.¹

Perception and understanding, of course, are both intentional states. But they do not serve as Aristotle’s model for intentional states generally, as Neoscholastics sometimes appear to think. Perception and understanding are central for him, but

¹For discussion of these issues, see Caston 1996, 1998.

because of the role he takes them to play in our mental economy. Each involves a key transition or “interface”: one between the world and our experience of it, the other between that experience and rational understanding. What happens at each of these junctures is obviously critical. Moreover, it is natural to think, as Aristotle does, that the content of other intentional states derives in some way from the content of perception and understanding. So for this reason alone, we need to have some grasp of their intentionality too.

Neoscholastics like Brentano could reply with a scaled-back proposal. They might concede that none of these doctrines provides a necessary condition of intentionality, and also that the first four do not provide a sufficient condition, even jointly. But (v), they might insist, *does* constitute a sufficient condition, at least in conjunction with the rest. Receiving form without the matter is something that pertains *only* to intentional states, they might argue, even if it does not pertain to *all* of them. It would thus mark a distinctive type of change—on their view, a “spiritual” or “intentional” change, to use Aquinas’ terminology, which cannot be reduced to underlying material changes. On a more recent version of this view, in fact, there is *no* underlying material change: receiving form without the matter instead is a *basic* and *fundamental* type of interaction with the world. On both versions, Aristotle still draws attention to intentionality. But he does not offer an explanation of it. Instead he takes it for granted: intentionality on this view is something *sui generis*, which cannot be further analyzed or explicated. The phrase “receiving form without the matter” is therefore construed in a *purely negative way*. In using it, Aristotle would simply be claiming that in perception we do *not* receive form in the manner of material changes; and this, it is assumed, must have something to do with intentionality. On this view, though, little more can be said.

Part of this reply is no doubt right. But only part of it. Aristotle *is* trying to distinguish what occurs in certain intentional states from what happens elsewhere in nature. The former essentially involves a *transmission of information*, whereas the latter generally does not. But this does not commit him to a primitive conception of intentionality, which is due to a fundamenal type of change, much less an immaterial one. As Aristotle develops the notion, receiving form without the matter is *not* purely negative. What he has in mind is a kind of *transduction*, where certain aspects of an object’s form are transmitted, though not in exactly the same way. They are not literally replicated, but transposed (as it were) to a different key: certain abstract but essential features of the original form are literally preserved, but now realized in a transduced form. This takes place, moreover, by means of ordinary material changes, even though not reducible to them. It is *implemented* by such changes, just as the activity of building is implemented by sawing and hammering, and by the material changes underlying these (cf. *de An.* 2.5, 417b8–9). Thus, on the view I shall argue for, Aristotle holds that intentionality is a natural phenomenon, which is fully realized in material changes.

2.2 Two Ways of Receiving Forms

In *De anima* 2.12, Aristotle turns from his survey of the individual senses in the previous five chapters (2.7–11) to the power to perceive in general.² One of his central aims in this chapter is to distinguish perception from other natural changes. Plants can be warmed or cooled, but unlike us, they can't *feel* or *perceive* it (424a32–b1). What accounts for this difference? It is not the fact that we are acted on by a perceptible quality, for plants are too: they are affected, he notes, “by the tangible qualities themselves” (ὕπὸ τῶν ἀπτῶν αὐτῶν, a34), for example by heat or cold. It's also not the fact that we have a soul, since plants also have “an animate part” (ἔχοντά τι μόνιον ψυχικόν, a33), indeed a soul.³ The example of plants being warmed is thus very pertinent. It shows that for perception to occur, it is not sufficient that a perceptible quality affects something animate. There must be some further difference that accounts for the fact that we perceive and plants do not.⁴

The obvious, but unilluminating, answer is that animals are *capable of perception* whereas plants are not. But that only pushes the question back a step. For we can still ask just what it is that enables animals to perceive, and how does it bring this about? We feel that there ought to be something in an animal's make-up, which plants lack, that gives it this capacity; and that it makes a difference to the kind of change that occurs, to the way in which they are affected by perceptibles, so that in one case there is perception and in the other case there is not. Clearly animals have the ability and plants do not. But the question is, what difference accounts for *that* difference?

Of course, the fact that we can raise a question doesn't guarantee that an answer will be forthcoming. In the abstract, Aristotle could resist this demand for explanation. He could stand his ground and repeat his earlier answer: animals have the capacity to perceive and plants do not, *end of story*. It simply comes down to

²The traditional chapter division between 2.11 and 2.12 slightly obscures this by splitting what was originally a continuous sentence: “Now that we have spoken in outline regarding each sense individually, I we need to understand about every sense in general that [...]” (καθ' ἑκάστην μὲν οὖν τῶν αἰσθήσεων εἴρηται τύπω, I καθόλου δὲ περὶ πάσης αἰσθήσεως δεῖ λαβεῖν ὅτι [...], 424a15–17). All translations are my own. Unless otherwise noted, Förster's edition (1912) has been used for the *De anima*.

³*De An.* 1.5, 411b27–30; 2.2, 413b7–8; 2.3, 414a33–b1; cf. 1.5, 410a21–24; 2.3, 415a1–3.

⁴It is not due to a difference in heat. In *PA* 2.2 (648b11–649b8), Aristotle discusses at some length the different and sometimes conflicting criteria we use when characterizing one substance as warmer than another, and he expressly distinguishes feeling warmer—that is, being warmer to touch—from heating more quickly or cooling more slowly. Boiling water, for example, is hot to the touch, but cools more quickly than oil and would in fact be said to be cooler by nature. Other criteria involve relative size, melting points, and combustibility. But Aristotle nowhere suggests that these different effects are due to fundamentally different causal powers. It is rather a question of how a single causal power, heat, affects the passive properties in different types of material. This applies equally to *de An.* 2.12: he is contrasting the effect of a single quality like heat on the perceptual organs of an animal with the effect it has on other bodies, including the body of a living thing that lacks perception. For an excellent detailed discussion of the *PA* 2.2 passage itself, see Lennox 2001: 191–95; for an attempt to enlist this passage in favor of a spiritualist reading, see Johansen 1998: 277–80. On spiritualist interpretations generally, see reference in next note.

having the right sort of soul, one capable of perception, and there is *no further explanation* that can be offered.⁵

But this is *not* the end of the story for Aristotle. He is sensitive to the demand for explanation and immediately moves to address it at 424b1–3. The reason (αἴτιον γάρ) that plants do not perceive, he explains, is that they lack a balance or “mean” (τὸ μὴ ἔχειν μεσότητά) and so do not possess the right basis (τοιαύτην ἀρχήν) for receiving or being affected by perceptibles in the relevant way. Instead they are “affected *along with the matter*” (πάσχειν μετὰ τῆς ὕλης). This explanation has two parts. The first part, about possessing a balance or mean, concerns what enables us to perceive. The second, about how we are affected when we perceive, concerns the activity of perception itself. In line with Aristotle’s general methodology (*de An.* 2.4, 415a16–22), we should look first to the activity. Only afterwards can we return to the capacity and what grounds it: the answer to the second question constrains the answer to the first.

What does it mean to say that plants are affected along with the matter? Aristotle does not elaborate. But it is plainly meant to contrast with the way the senses are affected. For he says that the senses receive the forms of perceptibles “*without the matter*” (ἄνευ τῆς ὕλης, 424a18) just a little earlier. Here is how the chapter begins:

We have spoken in outline about the senses individually. But with regard to every sense in general, we have to recognize that a sense is something that *can receive perceptible forms without the matter*, just as wax receives the ring’s signet without the iron or gold: it takes on the golden or brazen signet, but not in so far as it is a gold or bronze ring. The sense for each [type of perceptible] is likewise affected in a similar way by what has color or flavor or sound, not in so far as it is said to be each of them, but in so far as it is of this sort, in virtue of its *logos*.⁶

Aristotle applies the notion of receiving form without the matter twice: first to the sealing wax, which is supposed to offer a clearer illustration of his meaning, and then to perception itself, where he offers his most explicit formulation of the distinction. To receive a form without the matter, he claims, is *not* to be affected by an agent

(a) in so far as it is “said to be each of these things” (ἢ ἕκαστον ἐκείνων λέγεται, 424a23)

but rather

⁵ According to “spiritualist” interpretations, championed above all by M. F. Burnyeat, this in fact is Aristotle’s response. For a detailed examination of spiritualist interpretations and the debate surrounding them with full references, see Caston 2005, esp. §1.3 on the definition of spiritualism and §2 for criticism.

⁶ *De An.* 2.11, 424a15–2.12, 424a24 (cf. 3.2, 425b23–4): καθ’ ἑκάστην μὲν οὖν τῶν αἰσθήσεων εἴρηται τύπω. καθόλου δὲ περὶ πάσης αἰσθήσεως δεῖ λαβεῖν ὅτι ἡ μὲν αἴσθησις ἐστὶ τὸ **δεκτικὸν τῶν αἰσθητῶν εἰδῶν ἄνευ τῆς ὕλης**, οἷον ὁ κηρὸς τοῦ δακτυλίου ἄνευ τοῦ σιδήρου καὶ τοῦ χρυσοῦ δέχεται τὸ σημεῖον, λαμβάνει δὲ τὸ χρυσοῦν ἢ τὸ χαλκοῦν σημεῖον, ἀλλ’ οὐχ ἢ χρυσοῦς ἢ χαλκός· ὁμοίως δὲ καὶ ἡ αἴσθησις ἐκάστου ὑπὸ τοῦ ἔχοντος χρῶμα ἢ χυμὸν ἢ ψόφον πάσχει, ἀλλ’ οὐχ ἢ ἕκαστον ἐκείνων λέγεται, ἀλλ’ ἢ τοιούδι καὶ κατὰ τὸν λόγον. Because the Greek λόγος is a technical term for Aristotle and difficult to translate neutrally, I have left it transliterated to avoid prejudicing the interpretation. I discuss its meaning below in §2.4.2.

(b) in so far as the agent is “of this sort, in virtue of its *logos*” (ἡ τοιονδί καὶ κατὰ τὸν λόγον, a24).⁷

Plants, presumably, are affected in the first way (a) and possibly the second (b). The senses, in contrast, are affected *only* in the second way (b). The difficulty lies in spelling out what each of these alternatives amounts to, and Aristotle’s use of pronouns here is not very helpful.

On a fairly commonplace reading, Aristotle is drawing a contrast between the underlying *substance* and its *qualities*.⁸ Both, one might argue, are implicit in the clause before, when we are told that the sense is affected “by *what has* color or flavor or sound” (ὕπὸ τοῦ ἔχοντος χρώμα ἢ χυμὸν ἢ ψόφον, 424a22). The perceptible object does not affect us in so far as it is said to be “each of these,” that is, in so far as it is said to be some type of substance, but only in so far as it is “of this sort,” namely, colored, flavored and so on. To see or smell a gardenia is to be affected by it, but not as a gardenia. It is to be affected by it only in so far as it is colored or fragrant. The point of the contrast, on this reading, is that in perception we are affected by objects *only in a certain respect*, namely, only in so far as they have perceptible qualities. The assimilation that we undergo in perception is likewise *restricted*. We become like the perceptible object only in so far as it has the perceptible quality in question. To receive form without the matter, on this reading, is just to be affected by objects *in a more limited way*.

This reading is especially natural for so-called literalist interpretations of Aristotle.⁹ According to such interpretations, our sense organs become “likened” to their objects¹⁰ in a very strong sense, by *literally taking on* the perceptible qualities of their object. That is, every instance of the following schema will be true:

LIT Whenever I perceive a perceptible quality, *F*, my sense organ *literally* comes to be *F*—the predicate ‘*F*’ applies to my sense organ *in just the same sense* that it applies to the object.

⁷ Aristotle uses similar language when it comes to the understanding, drawing an explicit parallel to perception (*de An.* 3.4, 429a15–18); see below, p. 33. We will return to the interpretation of the pronouns in these phrases (424a23–24) below, pp. 34–35. Lorenz (2007: 193 n. 29) reads ἡ at 424a24 with the later Ambros. H50 supp., rather than the ἡ in the other MSS and accepted by all the other editors (including Förster and Jannone, who often favors H50). But this reading does not affect the difficulty over how to construe the contrast, and indeed Lorenz in his translation still understands this clause as governed implicitly by the preceding ἡ in a23 (“except *as* being of this or that quality;” emphasis mine).

⁸ W. D. Ross states this reading succinctly: “[...] so the sense for each kind of object (whether this is coloured, flavoured, or resonant) is affected by the object not in respect of the object’s *being*, for instance, *a chair or a table*, but in respect of its *being of a certain kind* (i.e. coloured, flavoured, or resonant) [...]” (Ross 1961: 265, emphasis mine). The reading is extremely widespread, but for other clear statements see e.g. Hicks 1907: 416 ad loc.; Block 1960: 94; and possibly Shields 2016: 248.

⁹ Richard Sorabji has been a leading proponent of this view, though in fact he holds an idiosyncratic version of it. The view more commonly associated with the label is in fact the one defended fully and explicitly by Stephen Everson (1997). For discussion of how literalism is to be defined, see Caston 2005, esp. §§1.1–2, and for criticism of literalist interpretations, §3.

¹⁰ *De An.* 2.5, 418a5–6 (cf. 417a20): πεποιθὸς δ’ ὁμοίωται καὶ ἔστιν οἷον ἐκεῖνο.

On this reading, when I look at a gardenia, part of my eye actually *goes white*; when I smell it, part of my nose *becomes scented* with the same heavy fragrance. But no part of me literally becomes a gardenia, in flesh and blood. I only take on its perceptible qualities or forms, without acquiring the gardenia's underlying matter, much less the substance. According to this interpretation, that is precisely the point of the comparison with the signet ring. The wax doesn't become metal, much less another ring. It only takes on the ring's *surface contours*—it comes to be *shaped* in the same way.¹¹ Aristotle's general principle that “man begets man” is thus upheld, though only in a restricted form. In perception, we replicate the *qualities* of an object, but not the object itself.

Part of this is undoubtedly correct. On Aristotle's view, we are not affected by perceptible objects in so far they are a certain kind of substance, but only in so far as they have certain perceptible qualities—only in so far as they are white, or sweet, or fragrant, and so on. This is not because we can't perceive objects like tables, chairs, or humans. We can, on Aristotle's view. But they are not perceived intrinsically (καθ' αὐτά). Rather, they are perceived extrinsically (κατὰ συμβεβηκός), since being a substance of a certain sort is extrinsic to perceptibles like white.¹² In fact, Aristotle says that the sense “is not affected at all by a perceptible in so far as it is that sort of thing.”¹³ We perceive the son of Cleon, he claims, “not because he is the son of Cleon, but because he is light.”¹⁴ What is principally perceptible (κυρίως αἰσθητά) are qualities that are intrinsically perceptible (καθ' αὐτά) to a single sense exclusively (ἰδία): colors, flavors, odors, tones, and tangible qualities like moisture

¹¹ Here we have to ignore the fact that the depressions and projections will be reversed in the case of the wax, as this is clearly not meant to be part of the *tertium comparationis*. All that is essential on this reading is the absolute displacement from the original surface. Theophrastus, in contrast, does press this point in criticizing Democritus, who also appeals to signet rings in his account of vision (*De sensibus* 52, = *Doxogr. Gr.* 514.5–10). On Democritus' theory, see below n. 69.

¹² *De An.* 2.6, 418a20–23; 3.1, 425a26–27. This has been denied by Irving Block (1960: 95–97), who argues that on the *De anima* account we cannot perceive physical objects either “directly” or “indirectly.” But this flies in the face of Aristotle's own words: he says that we *perceive* both Diaries' son (κατὰ συμβεβηκός γὰρ τούτου αἰσθάνεται, 2.6, 418a21–22) and Cleon's son (κατὰ συμβεβηκός ἡσθανόμεθα οἷον τὸν Κλέωνος υἱόν, 3.1, 425a25–26), even if only extrinsically.

The English terms “intrinsic” and “extrinsic” capture the contrast between Aristotle's technical terminology here better than any of the traditional translations: “intrinsic” is a very close rendering of καθ' αὐτό (literally, “in virtue of itself”), while “extrinsic” permits contingency or arbitrariness, without strictly implying it, just like Aristotle's use of κατὰ συμβεβηκός, which notoriously includes “necessary accidents.” For Aristotle, what is at issue is whether something holds in virtue of a thing's own nature as such, of some *F qua F*, or not.

¹³ *De An.* 2.6, 418a23–24: διὸ καὶ οὐδὲν πάσχει ἢ τοιοῦτον ὑπὸ τοῦ αἰσθητοῦ.

¹⁴ *De An.* 3.1, 425a25–26: οὐχ ὅτι Κλέωνος υἱός, ἀλλ' ὅτι λευκός. If we translate both occurrences of ὅτι with “that,” instead of “because,” the sentence would read: “with regard to Cleon's son, for example, we do *not* perceive *that* he is Cleon's son, but only *that* he is pale; and this happens to belong to Cleon's son.” But then Aristotle would be denying that we perceive extrinsic characteristics, instead of offering an example of a characteristic that *is* so perceived, as he clearly is in context (εἰ δὲ μή, οὐδαμῶς ἂν ἀλλ' ἢ κατὰ συμβεβηκός ἡσθανόμεθα οἷον [...], 3.1, 425a24–25), something he also affirms earlier (2.6, 418a21–22).

and heat.¹⁵ These qualities themselves act on the sense organs to produce perception,¹⁶ and it is with respect to them that the essence of each sense is defined.¹⁷ The perception of substances as such depends on this more basic form of perception.

But this cannot be Aristotle's point in the passage above. To become like an object *only in a certain respect* is not peculiar to perception. *All nonsubstantial change is like that.* If I heat water on a stove, the water becomes like the stove only in so far as both are hot. It does not become red, or hard, or metallic, much less a stove. Plants, similarly, become like the sun only in so far as they become warm; they do not become bright, fiery globes. In both of these cases, the patient becomes a replica of the agent, not in so far as the agent is a certain sort of substance, but only in so far as it has a certain quality, namely, the active causal power that is presently affecting the patient. Restricted likeness, then, is *not* something that distinguishes perception from ordinary changes that plants can undergo. It is something they share in common. It would dissolve the very contrast Aristotle is trying to draw in this chapter.

This becomes even clearer if we consider the comparison with signet rings. Taking on an impression is a perfectly ordinary alteration for Aristotle. It is the kind of change he can explain without difficulty using his standard account of alteration.¹⁸ If this was all he was after, he could have made his point as effectively *with a stick and clay*. When the round end of a stick is pressed into wet clay, the clay takes on a cylindrical shape—it is likened to the stick as result of the stick's acting on it. But the clay does not become wooden, much less a stick. Its likeness is thus restricted in just the way required by the commonplace reading.¹⁹

A moment's reflection should suffice to see that this comparison would not have worked. Had *De anima* 2.12 opened with the example of a stick being pressed into clay, it would have fallen completely flat. It is not just that it would have been more prosaic or less colorful. It is that something essential would have been lost.

2.3 The Wax and the Seal

Sealing wax does not merely take on an impression of the ring's surface. What it receives or takes on, Aristotle says twice, is the seal or *signet* (τὸ σφμεῖον, 424a20, a21).²⁰ This goes beyond the sort of likening that occurs when a stick is pressed in

¹⁵ *De An.* 2.6, 418a24–25; 3.2, 426b8–12.

¹⁶ *Sens.* 6, 445b7–8. Cf. *Sens.* 1, 438b22–23; *de An.* 2.5, 417b19–21.

¹⁷ *De An.* 2.6, 418a25.

¹⁸ In the *Categories*, Aristotle characterizes alteration as a change in quality (14, 15b12), and shapes as a kind of quality (8, 10a11–26). Sometimes, when something is completely transformed in shape, it results in a new substance and so could not be considered an alteration *in* a substance (*Ph.* 7.3, 245b9–246a9; cf. 1.7, 190b5–6). But this is a scruple about substantial changes and so does not affect the issue here, which concerns nonsubstantial changes.

¹⁹ This applies to the notion of “liken-ness”—a likeness produced as a result of likening—found in Charles' account as well (2000: 114–16).

²⁰ On this meaning of σφμεῖον, see Spier 1990: 107; cf. Lacroix 1955: 92–93; Boardman 1970: 428–29; and on classical finger rings in particular, see Boardman 1970: 212–34. Plato also speaks

clay, and not just because signets are pictorial, as ancient Greek signets standardly are. That sort of likeness is not central here.²¹ A signet is a *sign*, as the Greek σημεῖον makes clear. And a sign of a special sort. A signet produces a sealing, an impression used to establish the identity of its owner. When placed on a document, especially for legal or official use, a sealing *authorizes* the claims, obligations, promises, or orders made therein.²² A sealing thus differs from most other impressions in that it *purports to originate from a particular signet* and hence *from a particular owner*, typically the author or source of the document. This is essential to the nature of sealings. If sealings did not in general serve as tokens of the signet's owner, they could not vouch for the authenticity of a document in his absence.

The main point of comparison, then, is not the fact that the wax receives a set of contours, but rather that it “takes on the golden or brazen *signet*” (λαμβάνει δὲ τὸ χρυσοῦν ἢ τὸ χαλκοῦν σημεῖον, a20–21). It is true, of course, that the wax *also* receives the surface contours of the signet. But the two changes differ in a crucial respect. The contours of the ring are literally replicated in the wax. The signet is not. The wax takes on the signet, but “not in so far as it is gold or bronze” (ἀλλ’ οὐχ ἢ χρυσοῦς ἢ χαλκός, a21). The wax accordingly does not become another golden or brazen signet, but a *sealing*. The signet and the sealing differ, most obviously, in their material: one is metal, while the other is wax. But they also differ *as signs*. A sealing must be present along with a document in order to authorize it. A signet, like its owner, need not be. A sealing is a one-off effect. A signet, in contrast, can be used repeatedly, to produce many sealings.²³ What these two signs, as signs, share in common is their *content*. Both indicate the same thing, the owner of the signet, and

of signets being impressed at *Theaetetus* 191CD (ὥσπερ δακτυλίων σημεῖα ἐνσημαινομένους, D8), a passage frequently cited as a parallel for *de An.* 2.12. But Plato is describing *memory* there and the impressions are taken from perceptions and thoughts (ταῖς αἰσθήσεσι καὶ ἐννοίαις, *Tht.* 191D7), *not* perceptible objects, as in *de An.* 2.12. It thus has more in common with Aristotle's use of the signet ring comparison for memory at *Mem.* 1, 450a27–32. See the discussion below, §2.5.1.

²¹ The pictorial element does appear to be involved, on the other hand, when Aristotle uses the comparison to signet rings to explain memory's relation to perception in *De memoria* 1, 450a25–32 (for the text of the *Parva naturalia*, I use Siwek's edition (1963)). He describes the resulting modification as “like a kind of picture” or representation (οἷον ζωγράφημα τι τὸ πάθος, a29). For discussion, see below, §2.5.1.

²² In addition to sealing private correspondence, legal documents, and official public documents, sealings were also used to indicate possession, a person's identity in voting, and in religious sacrifice. For a good, brief summary of the uses of signets, with literary references, see Plantzos 1999: 18–22; also Richter 1968: 1–4 and esp. Boardman 1970: 13–14, 235–38, 428–30. Possession need not be limited to letters or objects either. A fourth century BCE Athenian clay impression of a signet, depicting a man and a woman embracing, has the legend: ΕΧΩ ΤΕ ΚΑΙ ΦΙΛΩ ΑΡΙΣΤΟΤΕΛΗ[N] (“I possess and love Aristotle”). Christodouloupoulou-Proukake 1977 examines the possibility that this love charm might have belonged to Aristotle's mistress, Herpyllis, and concludes that although there is no conclusive evidence in favor of such an identification, it cannot be ruled out either. (I would like to thank Seth Schein for translating this article for me.) On the use of magical love charms to maintain a lover's affection (*philia*), as here, as opposed to acquiring a new one by inciting sexual desire (*erōs*), see Faraone 1999: 27–30.

²³ A point exploited later by Academics: see Cicero, *Academica* 2.86.

thereby convey his authority. That is what the process of imprinting and the resulting contours are meant to secure: the wax takes on the owner's *insignia* from the signet and thereby signifies him. The wax receives the signet "without the iron or gold" (ἀνευ τοῦ σιδήρου καὶ τοῦ χρυσοῦ, 424a19–20), because it takes on the owner's insignia, and so comes to signify him, without becoming another signet.²⁴

If receiving form without the matter in general is to be understood on this model, then it is different from other natural changes. For it essentially involves the transmission of information. Ordinary natural changes do not. In ordinary natural changes, an object is literally *transformed*, by taking on the agent's form "with the matter": the patient *embodies* the form and so comes to be a replica of the agent, at least with respect to the agent's active quality. This is what happens when the stick produces an impression in clay. The clay embodies the shape of the stick by replicating its contours. In contrast, when something receives a form *without* the matter, the object does *not* embody that form—whatever changes do take place, it does not result in a flesh and blood replica. The object is still *informed* by the agent, if you like, as Augustine says in his *De trinitate*.²⁵ But what this amounts to in Aristotle's case is the object's carrying information about the agent. The word "information" is intended here in a very weak sense. Something can receive information without having any cognition or indeed awareness of it at all. Aristotle's example makes this clear. Sealing wax is completely without cognition or consciousness, much less intelligence.²⁶ What is essential is that the resulting state is *about* the cause from which it originates. Intentionality in this minimal sense, of *carrying information*, will extend to some inanimate things. But it does not occur in the vast majority of natural changes.²⁷

²⁴Against Everson, who is contemptuous of representationalist interpretations of Aristotle's account of perception (1997, 98). In charging that such interpretations are anachronistic, he evidently overlooks the pertinence of signets in the opening of *de An.* 2.12.

²⁵E.g. *De trin.* 11.2.3, 336.60–62 (ed. Mountain): "but that *informing* of the sense, which is called sight, is imprinted solely by the body that is seen" (illa tamen informatio sensus quae uisio dicitur a solo imprimitur corpore quod uidetur). For 'sensus informatus', see also 336.56–57 and earlier 11.2.2, 334.12–13.

²⁶I am thus taking the wax and signet ring to be a genuine example (οἶον, 424a19) of receiving form without the matter, as it was for scholastic commentators such as Philoponus (*In de An.* 444.17–26, cf. 437.19–25) and even Thomas Aquinas, who describes it as a "fitting example" (conueniens exemplum, *Sent. de An.* 2.24, §554); more recently, see also Denyer 1991: 194. If it were merely an analogy and not a genuine case, as some Neoscholastics claim (see n. 30 below), then the parallelism Aristotle uses to develop his point here (οἶον, a19 [...] ὁμοίως δὲ καὶ, 424a20–21) would not explain the nature of this sort of reception, but only gesture at it. Against this reading, see n. 30 below.

²⁷Nothing could count as a sealing without social conventions, of course, but conventions are not essential to the comparison, as I shall argue below (see §2.5.1). Greek and medieval commentators commonly held that this kind of change occurred naturally on its own, apart from cognition or awareness, in a medium like air or water, as well as in mirrors (Sorabji 1991). Aristotle himself never expressly states that the medium receives the form without the matter. But he does very suggestively compare the effect of a perceptible object on the medium to a signet ring on wax at *de An.*

The notion of information I am attributing to Aristotle is not, therefore, like modern information theories of content such as Fred Dretske's, which hold that information is transmitted in *every* nomic, or even every reliable, correlation; nor does Aristotle regard information quantitatively, as the amount by which uncertainty is reduced.²⁸ The notion of information in play here is a modest, pre-theoretical one, of *obtaining evidence* about the features of things, one that will be clarified through further analysis as we go along. It is not meant to introduce independent leverage over the texts, but arises instead directly from the comparison with sealing wax. A sealing is a token, a sign that gives evidence that identifies its owner and thus proof of ownership, because of the way it is produced from the signet and thereby transmits information about the owner's relation to the object.

To claim, then, that in perception the forms of perceptible qualities are received without the matter is to claim that *all perception essentially involves the transmission of information*. This is not all there is to perception, obviously: in particular, it does not say anything about consciousness or phenomenal awareness (cf. *Ph.* 7.2, 244b12–245a2).²⁹ But it makes intentionality, or at any rate the reception of information, a *necessary condition* of perception. The opening of *De anima* 2.12 doesn't make any stronger assertion than that. Above all, it does *not* claim that receiving form without the matter is *sufficient* for perception or cognition, much less a definition, as is sometimes claimed. For wax also receives the form without the matter, but it does not perceive the signet ring.³⁰

3.12, 434b27–435a10, esp. 435a9–10, something Democritus had also done before him (ap. Theophr. *De sens.* 51, 52 = *Doxogr. Gr.* 513.28–514.1, 514.5–6 = DK 68 A135).

²⁸ I have in mind the classic account in Dretske 1981: see chs. 1 and 2 in particular for the quantitative notion of information. This is not to rule out that there might be other similarities between Aristotle's theory and Dretske's (as Matt Evans has pointed out to me in conversation). On my view, Aristotle does take information in perception to be transmitted through the ratios of certain kinds (see below, §2.4); and both philosophers importantly also agree that more is required for perception and intentionality in general than just the transmission of information (as each understands it); see e.g. Dretske 1988: ch. 3.

²⁹ For more on the question of consciousness in Aristotle, see Caston 2002.

³⁰ Cf. Philoponus *In de An.* 444.17–20; Sorabji 1995: 218–19. Those who take it as a sufficient condition or even a definition are forced to claim that the wax sealing comparison is nothing more than an analogy, and a bad one at that, which “limps”: Owens 1981b: 77–78; Owens 1981a: 91; cf. Brentano 1867: 81. But this does not follow, if we take the opening claim merely to express a necessary condition of perception. This is, in fact, all the Greek states: it says that *every* sense is receptive of the forms of perceptibles without the matter. It does not state or imply the converse, that everything receptive of perceptibles' forms without the matter can perceive.

Alan Code has suggested to me (in conversation) that Aristotle's position might be even weaker still. The first sentence of *De anima* 2.12 speaks explicitly only about the senses and what they are capable of, and not their activities; and from the fact that every sense is *capable* of receiving form without the matter it does not follow that every *act* of perception involves the reception of form with the matter. Second, the words “concerning every sense generally” (καθόλου δὲ περὶ πάσης αἰσθησεως) need not indicate a strictly universal generalization; the claim that follows need hold true only “for the most part,” with the result that some senses might not be capable of receiving form without the matter at all. Such a reading, though, while compatible with the letter of the text, seems implausible in context. Aristotle does not at any point qualify the general character of his

The reception of information is critical to the function of perception on Aristotle's view. An animal must have the two contact senses, touch and taste, he thinks, or it could not survive: without them, it could not detect what should be eaten and what should be avoided (*de An.* 3.12, 434b10–24; cf. 3.13, 435b16–25). It will be even better off if it has one of the distance senses—sight, hearing, or smell—since then it will also be able to detect such things from afar (ἀλλὰ καὶ ἄποθεν, b24–27). In addition to survival value, perception also contributes to well-being, by laying the foundation for practical and theoretical understanding. What makes perception suitable for both of these ends is the reception of information, the fact that the senses, to use Aristotle's words, “report” (εἰσαγγέλουσι) the qualitative differences (διαφοράς) between objects:

The senses [that perceive] through external [mediums]—smell, hearing, and vision—belong to [animals] capable of locomotion. They are present (i) for the sake of survival in all [animals] that possess them, so that by perceiving ahead they can pursue their food and avoid what is bad and harmful; but in those [animals] that happen to possess comprehension as well, they are (ii) for the sake of well-being. For they *report many differences*, from which there arises comprehension of what can be understood and what can be done. Of these, sight is intrinsically superior with regard to necessities, while hearing is extrinsically superior with regard to understanding. For the power of sight *reports many diverse [differences]*, due to the fact that all bodies possess color, so that we also perceive common [perceptibles] through this sense most of all—by ‘common’, I mean magnitude, shape, change, rest, and number—whereas hearing only [reports] differences in sound and, in certain [animals], voice as well. But extrinsically, hearing makes the greatest contribution to intelligence, since language is responsible for learning due to its being audible, not intrinsically, but extrinsically. For it is composed out of words and each word is a symbol.³¹

comments or signal that he has reservations, as he often does (such as with the phrase “all or for the most part”). On the contrary, the generalization which opens *de An.* 2.12 is very strong. It is part of a μέν [...] δέ construction linking it with the last sentence of the previous chapter (2.11, 424a15), in which his exhaustive survey of each sense individually (καθ’ ἐκάστην) in the preceding chapters is contrasted with what “all” (πάσης) of them have in common “generally” or even “universally” (καθόλου). His intended focus in the chapter, moreover, is not just the capacity to perceive, but the type of activity that constitutes perception. This is clear when he develops the comparison with the wax and the signet ring in the subsequent lines. He speaks generally, without any qualification, of how “the sense for each [kind of perceptible] is also *affected* in a similar way” (ὁμοίως δὲ καὶ ἡ αἴσθησις ἐκάστου [...] *πάσχει*, 424a21–23).

³¹ *Sens.* 1, 436b18–437a15: αἱ δὲ διὰ τῶν ἔξωθεν αἰσθήσεις τοῖς πορευτικοῖς αὐτῶν, οἷον ὄσφρησις καὶ ἀκοή καὶ ὄψις, πᾶσι μὲν τοῖς ἔχουσι σωτηρίας ἐνεκεν ὑπάρχουσιν, ὅπως διώκωσι τε προαισθανόμενα τὴν τροφήν καὶ τὰ φαύλα καὶ τὰ φθαρτικά φεύγωσι, τοῖς δὲ καὶ φρονήσεως τυγχάνουσι τοῦ εὖ ἕνεκα· πολλὰς γὰρ εἰσαγγέλλουσι διαφοράς, ἐξ ὧν ἢ τε τῶν νοητῶν ἐγγίνεται φρόνησις καὶ ἡ τῶν πρακτῶν. αὐτῶν δὲ τούτων πρὸς μὲν τὰ ἀναγκαῖα κρείττων ἡ ὄψις καθ’ αὐτήν, πρὸς δὲ νοῦν κατὰ συμβεβηκός ἡ ἀκοή. διαφορὰς μὲν γὰρ πολλὰς καὶ παντοδαπὰς ἡ τῆς ὄψεως εἰσαγγέλλει δυνάμεις διὰ τὸ πάντα τὰ σώματα μετέχειν χρώματος, ὥστε καὶ τὰ κοινὰ διὰ ταύτης αἰσθάνεσθαι μάλιστα (λέγω δὲ κοινὰ μέγεθος, σχῆμα, κίνησιν, ἀριθμόν), ἡ δ’ ἀκοή τὰς τοῦ ψόφου διαφορὰς μόνον, ὀλίγους δὲ καὶ τὰς τῆς φωνῆς· κατὰ συμβεβηκός δὲ πρὸς φρόνησιν ἡ ἀκοή πλεῖστον συμβάλλεται μέρος. ὁ γὰρ λόγος αἰτιός ἐστι τῆς μαθήσεως ἀκουστός ὢν, οὐ καθ’ αὐτὸν ἀλλὰ κατὰ συμβεβηκός· ἐξ ὀνομάτων γὰρ σύγκειται, τῶν δ’ ὀνομάτων ἕκαστον σύμβολόν ἐστιν.

At the beginning of the *Metaphysics*, Aristotle tells us that sight gives us knowledge (ποιεῖ γνωρίζειν ἡμᾶς) more than any other sense because it “reveals many differences” between objects (πολλὰς δηλοῖ διαφοράς, 1.1, 980a26–27).³² But even the sense of touch is said to “report” the stimuli it encounters (εἰσαγγέλλειν, *Insomn.* 3, 461b3), as its organ is capable of receiving all the tangible differences between bodies.³³ In perception, then, we are not simply *affected* by qualitative differences. The senses also *tell* us about them, because it is their nature to detect and register such differences.³⁴

It is precisely this ability, which “discriminates the differences in the corresponding perceptible” (κρίνει τὰς τοῦ ὑποκειμένου αἰσθητοῦ),³⁵ that makes perception an essentially *discriminative* power (δύναμιν κριτικήν).³⁶ According to Aristotle, a sense perceives “accurately” (ἀκριβῶς) if it can discriminate all the qualitative differences along its range, to the greatest extent possible.³⁷ But it is also a question of how finely it can discriminate within this range: the most accurate senses must be sensitive, quite literally, to the most fine-grained differences—“the most minimal” (τὰ ἐλάχιστα)—between them.³⁸ Such powers of discrimination have considerable survival value, and animals with more rudimentary capacities will be at a disadvantage in pursuing and avoiding the things they ought.³⁹ According to Aristotle, nature

³² For the Greek text of the *Metaphysics*, I use Ross 1924.

³³ *De An.* 3.13, 435a21–24; cf. 2.11, 423b27–30.

³⁴ The difference between (i) the affection produced in us (πάθος καὶ κίνησις τις), which is different and peculiar to each perceiver (τοῦ ἰδίου ἑτέρου ἀριθμῷ, εἶδει δὲ τοῦ αὐτοῦ), and (ii) *the single public object everyone perceives* that triggers perception (τοῦ μὲν κινήσαντος πρώτου [...] τοῦ αὐτοῦ καὶ ἐνὸς ἀριθμῷ αἰσθάνονται πάντες), like a particular bell or incense or a fire, is very clearly distinguished at *Sens.* 6, 446b17–21, in response to a sceptical objection of Gorgias’ at *On Melissus, Xenophanes, and Gorgias*, 980b9–14.

³⁵ *De An.* 3.2, 426b10–12; also 2.6, 418a11–16; *GA* 5.1, 780b14–17, b29–31 (cf. b18–29); 5.2, 781a15–20. Cf. *Sens.* 4, 442b14–17; 7, 447b24–26.

³⁶ *APo.* 2.19, 99b35; *de An.* 3.3, 428a3–5; 3.9, 432a16; *MA* 6, 700b19–21. Cf. *Top.* 2.4, 111a14–20; *de An.* 3.12, 434b3–4; *Metaph.* 11.6, 1063a2–3; *EN* 10.4, 1174b34. On the rendering of κρίνειν as “discriminate,” see Ebert’s seminal article (1983) also Nussbaum 1978: 334; and more recently de Haas 2005; Corcilius 2014. For more detail on the conception of discrimination involved, see Charles 2000: 112–13 n. 4, and Caston, “Aristotle on Perceptual Content.” (under review).

³⁷ *GA* 5.2, 781a15–17: “To hear and smell accurately is, first, to perceive the differences of the underlying perceptibles as much as possible [...]” (ἐν μὲν γὰρ ἔστι τοῦ ἀκριβῶς ἀκούειν καὶ ὀσφραίνεισθαι τὸ τὰς διαφοράς τῶν ὑποκειμένων αἰσθητῶν ὅτι μάλιστα αἰσθάνεσθαι πάσας [...]). *GA* 5.1, 780b15–17: “To see sharply is [...] second, to discern the differences of the objects seen as much as possible” (λέγεται γὰρ ὁξὺ ὄρᾶν [...] ἐν δὲ τὸ τὰς διαφοράς ὅτι μάλιστα διαισθάνεσθαι τῶν ὁρωμένων). More generally, see *GA* 5.1, 780b14–33; 5.2, 781a14–20, b1–5; cf. *de An.* 2.8, 420a9–11. A sense can also be said to perceive accurately or sharply, if it can perceive objects at a great distance. But this depends more on the structures surrounding the sense organ. For the Greek text of the *GA*, I use Drossaart Lulofs’ edition (1965).

³⁸ *Sens.* 4, 442b14–15: “The most accurate sense is one that can discriminate the smallest [differences] in each kind” (τὰ γοῦν ἐλάχιστα τῆς ἀκριβεστάτης ἔστιν αἰσθήσεως διακρίνειν περὶ ἕκαστον γένος).

³⁹ Aristotle’s notion is perhaps stronger than it need be, at least as regards survival, since the finest-grained differences will not always matter, a point well-put at the beginning of Williamson 2013:

compensates in such cases by wiring sensory powers more tightly to motivational levers. Humans, for example, do not perceive odors without feeling a concomitant pleasure or pain, and animals with hard eyes—certain insects and reptiles—do not detect colors independent of fear or its absence. In both cases, Aristotle explains, this is so precisely because their sense organs are *not* especially accurate (ὥς οὐκ ὄντος ἀκριβοῦς τοῦ αἰσθητηρίου, *de An.* 2.9, 421a9–16). How well the senses receive information about the world is thus crucial to the functional role of perception.

2.4 How to Receive Form Without Matter

The doctrine of receiving form without the matter therefore *is* a locus of intentionality, as Neoscholastic interpretations have claimed, at least in the sense that information is received. But there is nothing magical about it. Receiving form without the matter is not a basic type of change, which is primitive and unanalyzable, much less an “immaterial” or “spiritual” change. This is clear from the example of the sealing wax. It is a change that comes about entirely through ordinary material changes. What distinguishes it is not materiality or immateriality, but whether it results *in a replica* of the form received.

For Aristotle, an agent acts in so far as it has a given form *F* and this is the same form that the patient receives. In ordinary changes, where the patient is “affected along with the matter” (πάσχειν μετὰ τῆς ὕλης), the patient becomes *F* quite literally: it comes to be *F* in just the same sense that the agent is *F*. This holds for substantial and nonsubstantial changes alike, whether a man begets a man or the sun warms a plant. The patient becomes a *replica* of the agent in the relevant respect: it comes to be like the agent with respect to the agent’s form or active quality and so *is F* in just the same sense that the agent is. Aristotle is thus committed to every instance of the following schema:

If *x* receives *F* from *y* with the matter, *x* becomes a replica of *y* with respect to *F*—*x* comes to be *F* in just the same sense that *y* is *F*.

By receiving a form in this way, an object *embodies* the form or active quality of the agent in its own matter and so literally becomes the same kind of thing. The resulting likeness may be partial in one way, in so far as it may be limited to just the active quality or form. But it is total in another way, in so far as it embodies this form literally. The water in the kettle literally becomes hot just like the burner and the clay literally takes on the contours of the stick. Notice that even here the matter of the agent and the patient may be different in kind, and not just different tokens of the same type, especially with nonsubstantial change.

“Intelligent life requires the ability to discriminate, but not with unlimited precision.” I am grateful to Matt Evans for pressing me on this point.

When a form F is received without the matter, on the other hand, the patient does not literally become F —to change in this way is *not* to embody or replicate F . The Neoscholastic interpretation emphasizes the negation. But we should give at least as much attention to the qualification, which restricts the scope of negation. The claim is not that there is not *any* replication. All that is denied is that the causal interaction results in a replica *of the active quality*, F . It could therefore involve replicas of *other forms* the agent possesses— G , H , and so on—forms that might be related to F in relevant ways.⁴⁰ The case of sealing wax once again makes this clear. Even though the signet is not replicated, its surface contours are; in fact, that is precisely how the wax takes on the owner's device or insignia. But taking on surface contours is, as we have seen, a perfectly ordinary material change. So while the signet is received *without* the matter, its surface contours are received *with* the matter. Consequently, the sealing will be like the signet in various respects, respects that are essential to the signet's functioning as the particular signet that it is. But the wax still does not replicate the signet: it becomes a sealing, not a signet. It thus receives F and is also like F in relevant ways (namely, by sharing the same device), without literally becoming F in the exact same way itself.

Receiving form without the matter, then, is not only *compatible* with other forms' being received with the matter, it might even *require* this as an underlying change, in just the same way that building a house requires activities like sawing and hammering, and indeed the motions underlying them, such as gripping and swinging, in turn. That is, it might well be the case that if a patient is to carry information about F , without actually embodying F , it must nonetheless replicate the agent in other, relevant respects—it must become G , H , and so on, in just the same sense that the agent is. In fact, without any such correspondences, the content of the resulting state would be a mystery: there would be nothing more that could be said to explain why this particular state was *about* the agent or the agent's being F ; its aboutness would be primitive and unanalyzable. But if there are underlying changes of an ordinary sort, where other relevant forms are received with the matter, then there *is* more that can be said. Let us examine more closely how such reception might work.

2.4.1 Transduction

When a form F is received without the matter, F is genuinely received and the patient is genuinely likened to the agent, even though it does not become an exact replica of F . Certain likenesses are preserved because F is received by receiving

⁴⁰Although it might seem superficially similar, Irwin's distinction between a form of F that "expresses F " and a form of F that "realizes F " (1988: §161, 308–9) is actually quite different. First, he regards realization as a special case of expression and so a subset of it, whereas the two kinds of receiving F I am distinguishing here are disjoint. Second, he appears to think of different forms of F standing in these relations, whereas I have in mind a single form being received in different ways, which seems closer to the way Aristotle formulates the distinction.

distinct, but relevantly related form(s). In this way, *F* is transmitted without itself being literally replicated, because certain of its essential features are. Receiving form without the matter is thus a type of *transduction*.⁴¹ A familiar example may help. Suppose I am listening to a vinyl record of Berg's violin concerto.⁴² What makes this possible? A bow drawn across a violin string produces vibrations in the string and then, as a result, in the air; these in turn are converted by a microphone into changes in an electric current, which are then transposed into charges on magnetic tape, and then later again into the grooves of a vinyl record; from there we go back again, through the vibrations of a record stylus running in the record's grooves, to an electric current, which, after it passes through various circuits, produces vibrations in a speaker cone and consequently in intervening air, until ultimately these vibrations strike the listener's ear. Only near the very beginning and end of the process do we have sounds. But the latter is possible only because of what intervenes. At each stage, a *signal* is transmitted, by causal means, through various media: a certain abstract pattern of magnitudes and their variations are successively embodied in different forms of energy. They share enough in common with the original sound for this process to be regarded as a *transmission* of specific information, which constitutes the signal. But this is achieved by the information being *embodied* at each stage in certain material characteristics, often very different from its original instantiation, that are peculiar to a given medium and the causal processes that produce them.

Aristotle didn't have a stereo system, of course. But he uses a similar example, also involving sound reproduction, which is all the more pertinent because the intervening "black box" in this case is filled not with electronics, but cognitive powers. A student can repeat his teacher's words: the sound he produces with his vocal cords

⁴¹ Transduction plays a central role in Pylyshyn 1984, who characterizes it as follows (151): "In its most general sense, as used, for example, in electrical engineering, a transducer is a device that receives patterns of energy and retransmits them, usually in some altered form. Thus a typical transducer simply transforms or maps physical (spatiotemporal) events from one form to another in some consistent way." For more detailed discussion, see Pylyshyn 1984: ch. 6. His predominant interest there is in constraining the notion of transduction in a way that will be adequate for his computationalism. Accordingly, he is concerned with transduction as a bridge between physical magnitudes in the world and their *symbolic* representation in the cognitive system, in a way that excludes, for example, analog representation (see esp. 159 n. 2). Peter King (1994) regards this narrower conception as posing a fatal problem for medieval Aristotelians, which is ultimately responsible for the "collapse of their research program" and the "scientific paradigm" underlying it, when they try to move from perception to understanding.

It is important to emphasize that transduction into symbolic representations is *not* what I have in mind here. For although non-analog, symbolic representation might come into play with Aristotle's conception of the understanding of language (*Int.* 1, 16a3–16), it does not apply to perception or to *phantasia*, which are not digital symbolic systems, but analog forms of representation (against, it seems, Silverman 1989: 279). Whether Aristotle's theory of understanding founders on the difficulties King raises is something I hope to address elsewhere.

⁴² The example of an audio recording is famously exploited by Wittgenstein in *Tractatus* 4.014 (cf. 4.01). But I have more in mind than simply the sharing of "logical form." What is crucial for transduction is the way in which the transmission of form is effected, both in its particular material instantiations and the causal processes that bring about the transitions from one to the other.

are of just the same sort as the sound he hears when his teacher speaks. It is, Aristotle says, “as if they issued from one and the same *stamp*” (οἷον ἀπὸ χαρακτῆρος τοῦ αὐτοῦ καὶ ἐνός).⁴³ In this case, the student’s utterances are actual replicas of the teacher’s utterances, much as the sounds from my stereo speaker mimic the violin’s sounds. But again they stand only at the beginning and end of the process. And what interests us most is what happens in between: the intervening effect of the teacher’s words on the student’s *hearing* and ultimately understanding. And hearing itself cannot involve a replica, as Theophrastus explains: if hearing took place by means of some further *internal sound*, we would face the same question all over again (τὸ γὰρ αὐτὸ λείπεται ζητεῖν). Who would hear these internal sounds? And would they be heard by means of still more interior sounds? To avoid a regress of homunculi, hearing must receive sounds in a different way, without replication.⁴⁴ Aristotle agrees. We do not hear sounds by making further sounds and then listening to *them*: sounds inside the ears, Aristotle insists, would obstruct hearing (*de An.* 2.8, 420a7–11, a15–18). Instead, whenever we hear sounds, they are received without the matter. They are received in a transduced form, where the sounds themselves of the sounds are not replicated, just certain essential features of them.

The idea of transduction—that a pattern can be transmitted without the source being fully replicated, by means of material changes that only share certain of its essential features—is, I suggest, what the example of sealing wax is meant to identify and what goes on in every case where form is received without the matter. Aristotle, I claim, accepts every instance of the following schema:

If x receives F from y without the matter, then for some relevantly related G ⁴⁵

- (i) x does not receive F from y with the matter, but receives it *by* receiving G
- (ii) x receives G from y with the matter and so replicates G .

To say that F is received by receiving some “relevant” G is, of course, only to issue a promissory note, which must be cashed out if the theory is to make any genuinely substantive claims. But the relevant characteristic will be (i) something *shared* with

⁴³ GA 5.2, 781a26–30: “For this reason learning spoken [words] comes about so that one might repeat what was heard. For the change that enters through the sense organ is of the same kind again as the change that issues from the voice, as though they had been produced from one and the same stamp, so that one can say what one heard.” (διὸ καὶ ἡ μάθησις γίγνεται τῶν λεγομένων ὥστ’ ἀντιφθέγγεσθαι τὸ ἀκουσθέν· οἷα γὰρ ἡ κίνησις εἰσῆλθε διὰ τοῦ αἰσθητηρίου τοιαύτη πάλιν οἷον ἀπὸ χαρακτῆρος τοῦ αὐτοῦ καὶ ἐνός διὰ τῆς φωνῆς γίγνεται ἡ κίνησις ὥσθ’ ὃ ἤκουσε τοῦτ’ εἰπεῖν.) I accept Barnes’ emendation of οἷα at a27, instead of the manuscripts’ οἷς.

⁴⁴ *De sens.* 21, 505.12–15 *Doxogr. Gr.*: “But when [Empedocles] explains that hearing occurs by means of internal sounds, making a sound inside, just like a bell’s, it is absurd to think that it is clear how people hear. For we hear the external sounds because of it, but why [do we hear] when it makes a sound? For the same thing still has to be found out.” (ἀλλὰ περὶ μὲν τὴν ἀκοὴν ὅταν ἀποδῶ τοῖς ἔσωθεν γίνεσθαι ψόφοις, ἄτοπον τὸ οἰεσθαι δῆλον εἶναι πῶς ἀκούουσιν, ἐνδον ποιήσαντα ψόφον ὥσπερ κώδωνος. τῶν μὲν γὰρ ἔξω δι’ ἐκεῖνον ἀκούομεν, ἐκεῖνου δὲ ψοφοῦντος διὰ τί; τὸ γὰρ αὐτὸ λείπεται ζητεῖν, reading τὸ γὰρ αὐτὸ in l. 15 with the MSS, rather than Wimmer’s correction, τοῦτο γὰρ αὐτὸ, which is printed in both Diels and Stratton.)

⁴⁵ For convenience, I have used just a single variable here, G , but the quantifier “some” is intended to allow for the possibility that there may be more than one such form.

the agent and (ii) essentially related to its being *F*, so that the patient will genuinely and literally become like *F* in ways relevant to its being *F*. It will not be a replica of *F*. But it will be a replica of *G*, and in a perfectly literal sense. It comes to be *G* in just the same sense that the agent is *G*.

One might be tempted to think that, if this account is right, the reception of *F* is “nothing over and above” the reception of *G* with the matter—that receiving *F* in such cases might be reducible to receiving *G*, or even eliminable altogether—so that talk of receiving *F* “without the matter” is little more than a *façon de parler*. But this worry rests on an unfounded assumption: it presupposes that a form is genuinely received *only if* it is *replicated*. And that is precisely what Aristotle is calling into question in *De anima* 2.12, by distinguishing between two forms of reception, both genuine. In receiving a form without the matter, the patient genuinely receives the form and is genuinely likened and assimilated to the agent. It just doesn’t result in a replica of that specific form. It is true that there is only a single token event involved when receiving form in this way: receiving *F* and receiving *G* are, to use Aristotle’s phrase, “one and the same in number.” But they are nevertheless two distinct types of reception, since what it is to be each differs—in his terminology, they differ “in being.” Receiving *G* is a perfectly ordinary reception with the matter, while *F* is received without the matter; and the latter occurs *through* the former, *by* the relevant *G*s being received. Receiving *F* without the matter, then, will not be reducible to receiving *G*, much less eliminable. Receiving *G* is simply *how* *F* is received; it is the mechanism by which it is received. In short, receiving form without the matter is *implemented* by receiving other forms with the matter. There can therefore be a robust explanatory relation between the two.

This is clear in the case of the signet ring. There genuinely is such a thing as sealing a document and it is not simply a matter of impressing shapes into wax, any more than signing a document is simply making a scrawl. In neither case do we have two separate token acts: a person does one *in* and *by* doing the other. In making the relevant scrawl, one is signing a document, and in making the relevant impression, one is sealing it. That is why one cannot sign a document without making a scrawl or seal it without making an impression. But the two remain distinct types of act, even if a single event instantiates both, since what it is to sign or seal a document is different from what it is to make a scrawl or an impression. And in each case the former is explained by the latter: just as an act is a signing because it is the making of a certain kind of scrawl, so an act constitutes a sealing because it is the making of a certain sort of impression.⁴⁶

Transduction occurs more widely than perception—as the case of sealing wax makes clear, it only constitutes a necessary condition of perception, not a sufficient one. But it may be especially well suited to cognitive processes. Aristotle himself describes *phantasmata* as being like perceptual stimulations “without the matter” (ὥσπερ αἰσθηματὰ ἐστὶ, πλὴν ἄνευ ὕλης, *de An.* 3.8, 432a9–10) from which they

⁴⁶ On the social context that makes it possible for these material changes to be sealings and signatures, see the beginning of §2.5.

are produced. In *De memoria* he says that the *phantasmata* retained in memory are “imprinted like a kind impression of the perceptual stimulation, just like signatories make with their rings.”⁴⁷ That might be hard to explain on some accounts: if the perceptual stimulation was already the result of a form’s being received “immaterially,” as Neoscholastic interpretations claim, it is not clear how the *phantasma* produced from it could get any more immaterial. In contrast, there is no problem with iterations of transduction, at least in principle: successive transformations might shave the signal down to ever more abstract patterns, while still preserving some features from the original source. The notion of transduction might also help in making sense of the analogy Aristotle draws between perception and understanding at the beginning of *De anima* 3.4. He seems inclined to think of understanding, at least in its most basic form, to be capable of receiving the form of its object (δεκτικὸν τοῦ εἶδους, 429a15) as a result of being affected by its object or something like being affected (ἡ πάσχειν τι ἂν εἴη ὑπὸ τοῦ νοητοῦ ἢ τι τοιοῦτον ἕτερον, a14–15). What exactly is to be made of this depends upon how Aristotle conceives of the object of understanding and the way it acts on our capacity to understand. But he signals clearly enough that transduction is involved when in the next line he says that the understanding itself is “potentially *the sort of thing*” its object is, though not *it* (δυνάμει τοιοῦτον ἄλλὰ μὴ τοῦτο, a16). The understanding thus does not replicate its object, much less embody it. But it is receptive of it, by becoming the sort of thing the object is.⁴⁸

We might consider transduction to be an instance of an even more general idea about how forms can be transmitted through certain changes without replication. Aristotle’s account of sexual reproduction, for example, involves the transmission of form in the opposite direction. Although the end result, the offspring, embodies the form of the parent, the seed that produces the offspring does not, but only transmits the form in virtue of certain “changes” (κινήσεις) it contains.⁴⁹ Cases of production are similar in this respect too: the form in the mind of the doctor or the builder leads to the instantiation of the form of health or the form of a house in material bodies (*Metaph.* 7.7, 1032a32–b14; *GA* 2.1, 734b36–735a5). But the

⁴⁷ *Mem.* 1, 450a30–32: ἐνσημαίνεται οἶον τύπον τινὰ τοῦ αἰσθήματος, καθάπερ οἱ σφραγιζόμενοι τοῖς δακτυλίοις.

⁴⁸ For more on both of these cases, see Caston 2005: 307–12.

⁴⁹ While the seed is a part of a living human, Aristotle emphatically rejects the suggestion that the seed itself is already a human being, a homunculus quite literally, as on preformationist accounts (*GA* 2.1, 733b31–734b4). The seed is rather something that can produce a human being, in virtue of the actual characteristics present in it, which are characterized as changes (734b4–735a4, esp. 734b8, 16–17, 22–23, 735a1–3). Aristotle thus thinks the seed possesses some relevant characteristic *G*, distinct from the substantial form *F* it leads to, though essential to it, such that the matter receives *F* by receiving *G* from the seed, analogous to transduction. But in this case, unlike perception, the matter becomes *F* in a literal sense, whereas the proximate agent, the seed, is not literally *F*. In cases of receiving form without the matter, it is the reverse: the agent is literally *F*, whereas the patient is not and will not as a result become *F* literally. In both processes, a form can be transmitted in ways that do not involve replication. I would like to thank Alan Code for this suggestion (in conversation).

actions that transmit these forms do not themselves embody them. None of these cases are transduction, as I have characterized it above, because of the direction of causation. But they similarly involve the transmission of form without its exact replica being embodied at every stage.⁵⁰

2.4.2 Ratios

We are now in a position to interpret the pronoun-ridden conclusion of the signet ring passage at the beginning of *De anima* 2.12. To quote it again (424a21–24):

The sense for each [type of perceptible] is likewise affected in a similar way, by what has color or flavor or sound, not in so far as it is said to be each of them, but in so far as it is of this sort, in virtue of its *logos*.⁵¹

⁵⁰ Matthen has recently criticized my use of the terminology of transduction (2019: 275–76) on the ground that it undervalues later contributions to vision science as “merely a footnote to Aristotle” (e.g. geometrical optics, the application of the theory of electromagnetism to the stimulation of the retina, and the higher cognitive processing we now think happens subsequent to transduction in vision). This is largely rhetorical, since I do not make any claims about Aristotle anticipating future discoveries or about their relative importance. My point is merely that Aristotle’s explanation of a second kind of reception in terms of sealing wax has similarities to our notion of transduction, something Matthen does not contest and which is an integral part of our theories of perception. His critique seems instead to rest on the assumption that I “*equate* visual sensing with transduction” (276, my emphasis). But since I only claim that transduction is a necessary condition of perception, not a sufficient one, the conclusions he draws do not follow.

⁵¹ ὁμοίως δὲ καὶ ἡ αἴσθησις ἐκάστου ὑπὸ τοῦ ἔχοντος χρῶμα ἢ χυμὸν ἢ ψόφον πάσχει, ἀλλ’ οὐχ ἢ ἕκαστον ἐκείνων λέγεται, ἀλλ’ ἢ τοιουδί καὶ κατὰ τὸν λόγον. It is useful to be fully explicit about how each phrase is construed, since the literature generally has not been. I take the object that has (τοῦ ἔχοντος) a given color, flavor, or sound in 424a22 to be the implicit subject of the verb “is said to be” (λέγεται) in a23 and “each of these” (ἐκαστον ἐκείνων) to be its predicate, parallel to “is of this sort” (τοιουδί) in the next clause. The plural “these” (ἐκείνων) refers back to the set of *perceptible qualities* just listed in a22: color, flavor, sound, *etc.* If so, then the distinction is between being affected by objects (a) in so far as they have a given perceptible quality and (b) in so far as they are “of this sort” (τοιουδί), that is, in so far as they have a more general characteristic that is not identical with the color, flavor, *etc.*, even though essential to it.

The alternatives are awkward. To read it as a contrast more favorable to the literalist, between being affected by substances as such and being affected by them in so far as they are colored, flavored, and so forth, the plural pronoun “these” (ἐκείνων, 424a23) would have to refer back *not* to color, flavor, and sound, but rather to the singular expression “what has” (τοῦ ἔχοντος, a22) them, and the phrase “each of them” (ἐκαστον) would also have to serve as the *subject* of the verb “is said to be” (λέγεται, a23), as for example Hicks argues (1907: 416 ad loc.). Hicks concedes that this requires one to supply “each” implicitly a *second time* as the predicate, to get the proper antithesis with “of this sort” (τοιουδί) in the next line (a24). One is not likely to find such clumsiness preferable unless one is already independently committed to literalism. Others, like Ward and Silverman, read “these” (ἐκείνων) in the way I have suggested, as referring back to the perceptible qualities just mentioned (Ward 1988: 220–21; Silverman 1989: 289 n. 9). We differ, though, in that they, like Hicks, think that “each of these” (ἐκαστον ἐκείνων) is the subject of “is said to be” (λέγεται) and take the subsequent contrast to be between being affected by the object in so far as it has a *determinable* characteristic, like color, and in so far as it has a *determinate* characteristic, like crimson.

Though the sense is affected by “what has color, or flavor, or sound,” it is not affected in so far as the object is “said to be *each of these*” (οὐχ ἢ ἕκαστον ἐκείνων λέγεται, 424a23), that is, not in so far as it is said to be of a certain “color or flavor or sound” (a22), for example, crimson, spicy, or shrill—in short, the determinate perceptible qualities that we properly perceive by each sense. Rather, each is affected in so far as the object is “of *this sort*, in virtue of its *logos*” (ἀλλ’ ἢ τοιοῦδι καὶ κατὰ τὸν λόγον, a24), so some kind to which these determinate qualities belong, having to do with its *logos*, a term we need to clarify. Suppose I look at a red chili pepper. My eye is affected by it and receives its visible quality, crimson. It does this, not by becoming crimson itself, but by taking on a more general feature in virtue of which (κατὰ) the object is crimson, namely, the *proportion* that on Aristotle’s view is an essential feature of crimson and so belongs to its *form* and *account*. The phrase “in virtue of its *logos*” in the passage above expresses all three of these senses—proportion, form, and account—but especially the first.⁵² He is drawing a contrast between perceptible qualities and the proportions or ratios that belong to their essence.

This might seem surprising. Proper perceptibles are qualitative for Aristotle and he would certainly resist any attempt to reduce quality to quantity. He ridicules theories that identify perceptible qualities like white, sweet, and hot with numbers (*Metaph.* 14.5, 1092b15–16) and strongly rejects others, like Democritus’, which reduce them to shapes (*Sens.* 4, 442b10–14). But he does not deny that qualities exhibit quantitative features. On the contrary, he thinks the perceptible qualities exclusive to each sense (ἴδια αἰσθητά) are *defined* by ratios of contrary qualities.⁵³ Perhaps this is most obvious in the case of tangible qualities, like hot and cold, which differ in degree (μᾶλλον καὶ ἥττον): intermediate temperatures, in Aristotle’s view, are to be explained straightforwardly in terms of proportions of the two extremes (*GC* 2.7, 334b8–16, esp. b14–16). But there was also a widespread tradition in Greece, which Aristotle knows and accepts, of treating the pitch of sounds in terms of ratios.⁵⁴ Such an explanation might have been more easily accepted in this case because it was possible to measure the quantities involved even then.⁵⁵ But there were also theories of which Aristotle was aware, such as Archytas’

I do not see how this contrast would be relevant in context. I take Aristotle to have in mind determinate perceptible qualities throughout (such as crimson, spicy and shrill), since they are what we properly perceive by each sense, but he refers to them here simply by their genus.

⁵² This sense of *logos* is also crucial in the immediate sequel to our passage, where Aristotle characterizes the sense itself as a kind of proportion (424a26–28) that, like the tuning of an instrument, can be damaged by extreme changes that destroy the balance within the sense organ (a28–32; cf. 3.2, 426a27–b7).

⁵³ For an excellent detailed discussion of Aristotle’s use of mathematics in his theory of perception, see Sorabji 1972.

⁵⁴ See e.g. *APo.* 2.2, 90a18–23; *de An.* 3.2, 426b3–7; *GA* 5.7, 786b25–787b20; *Metaph.* 1.2, 997b21; 10.1, 1053a15–17. For a clear and accessible introduction to the use of ratios in Greek harmonics, see the introduction to Barker 1989, esp. 5–8.

⁵⁵ The monochord, whose two sections were used to measure the ratios, appears to have been the invention of a fifth century BCE theorist, Simos (West 1992: 240–41). But ancient testimonia link the discovery of ratios to other means of sound production as well: a smith’s differently weighted

and Plato's, that sought to explain pitch in terms of quantities that belong to the sound itself, such as speed;⁵⁶ and Aristotle himself thinks that while different pitches should not be identified with different speeds, differences in the former are to be explained by differences in the latter (διὰ τὸ τάχος [...] διὰ βραδυτήτα, *de An.* 2.8, 420a26–b4). Aristotle is willing to extend quantitative analysis to the remaining senses as well, explicitly relying on its success in music (*Sens.* 3, 439b30–440a6). He discusses the ratios of contrary qualities in his account of both colors and flavors at some length.⁵⁷ And while he does not explicitly apply them to odors, he takes the latter to be so closely correlated to flavors that the specific differences within each type are said to be ordered between their respective extremes in just the same way, so that the quality spaces have analogous structures.⁵⁸

It is important to emphasize that these qualities are not defined solely by the ratio or number on its own.⁵⁹ Qualities in different sense modalities might well share the same abstract ratio. As with pitches, Aristotle recognizes only a finite number of basic colors and flavors, corresponding to certain whole number ratios,⁶⁰ and some of these might well agree numerically. They will not be the same quality, though, since proportions for Aristotle are always the proportions *of* something: the numbers that stand in proportion to one another are the amounts of the items being compared, such as constituents in a mixture.⁶¹ Perceptible qualities will therefore be defined as proportions *of some specific pair of contrary qualities*. So even if crimson and spicy were to share the same numeric ratio, they would still be proportions of different contraries: one is a proportion of white and black, the other a proportion of sweet and bitter. The resulting qualities will therefore differ, even though they are analogously the same (cf. κατ' ἀναλογίαν, *GC* 2.6, 333a28–30), in virtue of the abstract proportion they share.

To receive the form of crimson in the eye, then, does not entail that any part of our eye literally becomes crimson, any more than that some part of us becomes a stone when we perceive one (1.5, 410a8–13; 3.8, 432b20–432a1). But there must be some relevantly related predicate that is true of both crimson and some part of our eyes, and in just the same sense. What the passage at the beginning of this section (424a22–24) claims is that the organ will embody the same *logos* or proportion of contrary qualities: just as a crimson object has a certain proportion of light and dark, so my eye will have the same proportion between two of *its* contrary

hammers, strings held taut by different weights, cymbals of different thicknesses, and vessels filled with different amounts of liquid (for detailed critical discussion, see West 1992: 234).

⁵⁶ Archytas 47 B 1 DK; Plato *Timaeus* 67A–C, 97E–80B.

⁵⁷ Colors: *Sens.* 3, 440b14–26. Flavors: *Sens.* 4, 442a12–31; *Metaph.* 10.2, 1053b28–1054a13.

⁵⁸ Odors' relation to flavors: *Sens.* 4, 440b28–30; 5, 443b3–20.

⁵⁹ Against Silverman 1989, which emphasizes that what is received is only the abstract numerical ratio (280, 289 n. 8, 290 n. 16); for criticism, see Everson 1997, 97, 99.

⁶⁰ Whole number ratios of colors: *Sens.* 3, 439b30–440a2. Of flavors: *Sens.* 4, 442a12–16.

⁶¹ See esp. *Metaph.* 10.2, 1053b28–1054a13. The same point underlies his critique of Pythagorean and Platonic appeals to ratios: *Metaph.* 14.5, 1092b16–22; cf. 1.9, 991b13–20.

qualities—perhaps heat and cold, or viscosity and fluidity, or some other pair.⁶² One could, if one likes, say that my eye is colored *in a way* (ὡς κεχρωμάτισται, *de An.* 3.2, 425b22–23), in so far as it embodies the defining proportion of a color. But it will be the same only in an analogical sense (cf. *Metaph.* 5.9, 1018a13), since it will not embody this proportion in the same contrary qualities and so will not become crimson in the literal sense that the object is.

Aristotle is thus not drawing a distinction in the opening of *De anima* 2.12 between a substance and its qualities, as the traditional interpretation assumes. He is drawing a distinction between *two sorts of qualities*: the perceptible quality itself and some essential feature of that quality, such as its defining proportion or ratio. This distinction enables him to refine the sense in which a colored object, for example, affects us. It is not its color *tout court*, but rather an *essential* or *defining* feature of the color, which makes it the very color that it is.⁶³ As a result, we receive the perceptible quality in a transduced form, “without the matter,” by receiving its defining proportion *with* the matter and embodying it in a different pair of contraries. We thus take on an actual feature of the perceptible object, its ratio, in virtue of which it has that perceptible quality, and in so doing acquire information about the character of things in our environment. We do not replicate the perceptible quality itself.

Perceptual content arises, at least in part, because we are able to take on certain abstract features essential to perceptible qualities and thus receive information about them. The differentiating characteristics of perceptual states represent the characteristics of perceptible objects because they stand in a strict analogical relation to them.

⁶²Against Everson 1997: 97, who assumes too hastily that the only available pair of contraries would be *the same pair* underlying the external perceptible quality and so would entail a literal replication of the quality. I should add that though Aristotle does not offer any details, I am assuming that for each organ, there would be a specific pair of contraries in which the proportions of its own percepts are embodied. There might be some story to tell as to why one pair is used rather than another. But there also might not: it might simply be a brute fact that has to be accepted with “natural piety.”

⁶³Lorenz (2007: 193 n. 29) dismisses my view in Caston 2005, on the grounds that it would commit Aristotle to the sense’s not being affected by the perceptible as such, but only incidentally. This would hold of Silverman 1989 (not cited by Lorenz), who states repeatedly that the ratio is an incidental or extrinsic characteristic (271, 272–73, 280–81, 285). But it mischaracterizes my view, which explicitly holds that the sense is affected by the perceptible in virtue of one of its *essential characteristics*, namely, the defining ratio of the perceptible quality that makes it the specific quality that it is (Caston 2005: 314–15). Indeed, it is precisely because it is through an essential feature, and not some extrinsic characteristic, that it counts as a reception of *that very quality*, even if it is reception “without the matter.” It thus does not contradict Aristotle’s views about intrinsic perception, as Lorenz claims. For more on colors and other perceptible qualities, see Caston 2018).

2.5 The Authority of Perception

In *De anima* 2.12, perception is distinguished from other natural processes in so far as the senses are affected in a very specific way, where perceptible forms are received “without the matter”; and this, I have argued, is a kind of transduction where only certain essential features of the forms are preserved, transmitting information about the characteristics of objects in our environment. But it is worth reflecting further on Aristotle’s choice of signet rings and sealing wax as a model, and the implications this has for intentionality.

2.5.1 The Seal of Reality

The example of sealing wax is meant to be a familiar one his readers would have been acquainted with. The strategy is similar to the one Aristotle employs in *Physics* 2 in developing his own distinctive conception of teleology. We will more readily understand final causes, he thinks, if we start by considering artifacts, since they are better known to us (ἐκ τῶν γνωριμωτέρων ἡμῖν), even though in his own view the best examples of teleology are not artifacts at all, but occur in nature without design or deliberation—things like spider webs, swallows’ nests, and the leaves of plants (2.8, 199a20–32). In such cases, we see final causation in its purest form, independent of the aims of a conscious being, and thereby arrive at what he believes is “naturally clearer and better known” (ἐπὶ τὰ σαφέστερα τῇ φύσει καὶ γνωριμώτερα). So too with a familiar artifact like sealing wax, where we can more easily see how information is transmitted by ordinary material changes. This allows us to understand how the same thing can occur in a case like perception, where information is transmitted naturally *without* social conventions or practices. It is plausible to think that here as well Aristotle regards the natural case as the more fundamental one, which in itself can be better known, even though it is not so initially to us.

Comparing mental states to impressions in wax is not new with Aristotle, of course. There are many references earlier in Greek literature, for example, to inscribing words on “the tablets of the heart.”⁶⁴ The implication here is also that these mental states come to possess content, by using an example familiar from everyday life in antiquity, of inscribing words on wax tablets. But this comparison also differs significantly from Aristotle’s.

In the first place, it typically concerns *memory*, not perception, with storing a record of events that can be retained over a long period and later accessed when

⁶⁴E.g. Aeschylus, *Supplices* 179, *Prometheus Vincit*. 789, *Agamemnon* 80, *Choephoroi* 450, *Eumenides* 275; for close discussion of the use of the metaphor in these passages, see Sansone 1975: ch. 4; see now Agócs 2019, esp. Section 2. Cf. also Pindar, *Odes* 10.2–3; Sophocles, *Philoctetes* 1325, *Trachiniae* 683. Plato’s imagery in the *Philebus* and *Theaetetus* is related to these (see below). On its use in the later Platonic tradition, see Sheppard 2017.

needed. But second, the wax tablet image here is essentially *linguistic*. The content is expressed in words and so naturally suggests representation in a “language of thought.” No such thing is required by Aristotle’s account. A sealing will signify the owner of the ring, by means of the owner’s emblem or insignia. But this is typically pictorial, not linguistic. For Aristotle the senses are not inscribed,⁶⁵ as they are in Plato’s playful comparison of the soul to a book, written by an inner scribe (*Philebus* 38E–39C).⁶⁶ Rather they are impressed by the perceptible qualities themselves and thereby come to possess the insignia, as it were, of the perceptible object, the outward signs by which the underlying substance makes itself known.⁶⁷ Plato does famously speak of signet rings and wax in the *Theaetetus* (191C–196C), which is often cited in this context as a parallel. But what is not usually appreciated is that Plato’s comparison there is not to perception, but to memory, and accordingly for Plato the sealing is not produced by perceptible objects, but *by perceptions and thoughts* (ταῖς αἰσθήσεσι καὶ ἐννοίαις, 191D7, 194D4, cf. 195A6). So even when Plato uses sealing wax as a model for mental states, it is more closely aligned to the literary figure of the tablets of the heart, in so far as both concern memory. Aristotle is alive to this difference and in fact helps himself to a number of the details in his own account of memory, especially regarding the relevance of the underlying material conditions (*Mem.* 1, 450a27–b11).

In comparing sealing wax to perception and not memory in *De anima* 2.12, Aristotle is departing from this tradition. In this respect, he is much closer to other predecessors. Gorgias, for example, says in the *Encomium of Helen* that “the soul is impressed by the objects we see through sight” and the “images of objects seen are etched into the mind.”⁶⁸ His contemporary, Democritus, is likewise reported to have compared the effect of a perceptible object to “the sort of imprinting you might make in wax,” although in his case the effect is not the one made directly on the sense organ, but the prior impression made on the intervening medium, air, which in turn transmits its effect to the organ.⁶⁹

⁶⁵Against Kalderon 2015: 172.

⁶⁶Plato also mentions an inner painter (ζωγραφόν) who provides illustrations, but this is subsequent to the scribe’s writing (μετὰ τὸν γραμματιστὴν τῶν λεγομένων, 39b6). If Sedley 2004: 137–38 is right, the wax block model in the *Theaetetus* should also be understood in line with this passage, and so as “discursive” and involving “internal verbalization.”

⁶⁷To use Matthen’s phrase, what they provide perceptions with is precisely a “place-of-origin stamp” (2019: 281). But such a mark does not have to be recognized by the subject in order for the perception to be about the object (*pace* Matthen). On this account, the fact that it originates in this way is sufficient: it is a natural sign. There is no homunculus. (Similar remarks apply to Matthen’s criticisms at 283.)

⁶⁸Gorgias, *Encomium of Helen*, 15 (ed. Donadi): ἃ γὰρ ὁρώμεν [...] διὰ δὲ τῆς ὄψεως ἡ ψυχὴ κἀν τοῖς τρόποις τυποῦται. 17: οὕτως εἰκόνας τῶν ὁρωμένων πραγμάτων ἢ ὅψις ἐνέγραψεν ἐν τῷ φρονήματι.

⁶⁹Theophrastus, *De sens.* 51 (= *Doxogr. Gr.* 514.1–2 = DK 68 A135): παραβάλλον τοιαύτην εἶναι τὴν ἐντόπωσιν οἷον εἰ ἐκμάξιαις εἰς κηρόν. Cf. also *De sens.* 52 (= *Doxogr. Gr.* 514.5–6 = DK 68 A135): ὁ ἄηρ ἀπομάττεται καθάπερ κηρός. Aristotle may have in mind Democritus’ views about the effect on the medium and subsequent effect on the sense organ, when he discusses impressions being made in wax right through to the other side at *de An.* 3.12, 435a1–10, esp. a10: ὥσπερ ἂν εἰ τὸ ἐν τῷ κηρῷ σημεῖον διεδίδοτο μέχρι τοῦ πέρατος.

The third and by far the most important difference, though, is the epistemological dimension of Aristotle's model, which derives from the *legitimizing* function of seals. Sealings are used to verify that a document stems from a person with the relevant authority, who sanctions its contents. In the case of perception, this amounts to the suggestion that objects in the world give their *seal* and thereby their *authority* to the messages the senses report: our perceptions have *the backing of the world* and so provide us with a warranted basis from which to form beliefs and act. In this respect too, Aristotle's use of sealing wax as a model differs critically from Plato's. If the memories Plato is concerned with in the *Theaetetus* carry any authority, it is only because the perceptions that stamped them already possessed some authority. Aristotle, in contrast, aims to explain this prior fact by applying the signet ring model to perception itself. Perceptions carry authority because the *world* legitimates them: they are not mere appearances, because of the way they come about. They are the true coin issued by the world.⁷⁰

Of course, it is one thing to claim this and another to have established it. As Athenian law well recognized, there are *fraudulent* sealings, even if it is very difficult to counterfeit the signet itself.⁷¹ A given sealing might not originate from the person it purports to have originated from, even if it comes from the right signet, since someone else might have stolen it or used it. In much the same way, one might reasonably worry that some of our perceptual experiences do not come from the objects they seem to and thus misrepresent their source. So even if there is an authoritative way of receiving information, like sealings, it cannot completely rule out the possibility of fakes. It cannot provide a panacea for all of our epistemic ills.

Aristotle would fully acknowledge the justice in this complaint. He does not wish to deny the existence of error or its salience. Just the opposite. Error, to use his words, is "endemic" (οἰκειότερον) to animals, who spend "a great deal of time" in this state (πλείω χρόνον). In fact, he regards this as a datum that any adequate psychology must account for, and he ridicules his predecessors precisely because he thinks they cannot account for it, while he believes that his own theory can.⁷² But he explains it by appealing to a distinct new ability he calls *phantasia*.⁷³ So it does not belong to perception, at least not in its most basic form. To his mind, then, the problems raised by error do not undermine the ultimate authority of perception itself.

⁷⁰ In this respect, Aristotle's comparison has much in common with the Stoics'. See Caston, *The Stoics on Content and Mental Representation* (in progress).

⁷¹ This law, like many others, is ascribed to Solon: Diogenes Laertius 1.57; Diodorus Siculus 1.78.

⁷² *De An.* 3.3, 427a29–b6: "Yet they should have also said something at the same time about making errors, for this is endemic to animals and the soul spends a great deal of time in this state. For it is necessary [on their theory] that either (i) all appearances are true (as some have said); or (ii) contact with what is unlike is error (since that is the opposite of recognizing like by like). But both error and knowledge of contraries seem to be the same." (καίτοι ἔδει ἅμα καὶ περὶ τοῦ ἡπατῆσθαι αὐτοὺς λέγειν, οἰκειότερον γὰρ τοῖς ζῴοις, καὶ πλείω χρόνον ἐν τούτῳ διατελεῖ ἡ ψυχὴ· διὸ ἀνάγκη ἦτοί, ὥσπερ ἔνιοι λέγουσι, πάντα τὰ φαινόμενα εἶναι ἀληθῆ, ἢ τὴν τοῦ ἀνομοίου θίξιν ἀπάτην εἶναι, τοῦτο γὰρ ἐναντίον τῷ τὸ ὅμοιον τῷ ὁμοίῳ γνωρίζειν.)

⁷³ For a close examination of these arguments in context, see Caston 1996.

It is easy to understand the motivations behind such a move. Counterfeits are effective only if sealings are for the most part genuine. The success of counterfeits depends on the presumption that the tokens in question are genuine, and this presumption cannot survive for long if there are too many counterfeits.⁷⁴ Fraud is viable only if there is widespread reliability, and part of what ensures this reliability in the case of seals is the extraordinary precision and accuracy of their details.⁷⁵ In the case of perception, this must be true as well. Perception could not perform its proper function if it did not succeed “for the most part” in informing us about qualitative differences between objects—any process that didn’t simply wouldn’t count *as perception*. Just as wax sealings must be hard to counterfeit if they are to authenticate documents reliably and serve as sealings, so too the stimulation of our perceptual organs cannot be informative in the way its function requires unless it is difficult to simulate in ordinary circumstances. It is not that it cannot be mimicked, or that we cannot be taken in. Obviously, it can and we often are. But this is only because perceptions *in general* are reliable and so standardly reveal genuine features of the surrounding world to us.⁷⁶

Aristotle insists repeatedly that perception has this sort of authority. In *Nicomachean Ethics* 6.2, he identifies perception as one of three faculties in the soul that have *authority* over action and truth (τρία δὲ ἐστὶν ἐν τῇ ψυχῇ τὰ κύρια πράξεως καὶ ἀληθείας). But unlike the other two (understanding and desire), perception is not “the source of any action” (οὐδεμιᾶς ἀρχῇ πράξεως, 1139a17–19). It is only in charge of truth—its business, if you will, is the acquisition of truth.⁷⁷

⁷⁴ Archaeologists have discovered glass seals that all share the same insignia, sometimes referred to as “look-alikes.” But something analogous holds in their case too: they function as seals only if they represent a single office or institution, where more than one person is authorized to act on its behalf (Younger 1999). The sealings thus still purport to come from a single source, even if not from a single person.

⁷⁵ See Sines 1992, who provides the data to show that the level of precision was typically “greater than what could be attained by normal vision unaided by a lens” (53); see esp. 67–68.

⁷⁶ This general line of argument will be familiar to many readers from Donald Davidson’s argument against radical scepticism based on the principle of charity (2001). But the underlying intuition is not original with Davidson. Aristotle makes a similar assumption about people’s beliefs, the “appearances” or *phainomena* from which he thinks all investigation must start. He rules out the possibility that anyone’s beliefs could be *wholly* wrong: in order for a proposition to be found credible by a believer, there must be something to recommend it to a being naturally suited to learning, even if what is believed is wrong in other ways, perhaps significantly so (*Rh.* 1.1, 1355a15–18; *Metaph.* 2.1, 993a30–b11). But there are also important differences from Davidson about the underlying intuition, which arguably favor Aristotle. When it comes to beliefs Aristotle does not hold anything as strong as Quine and Davidson’s principle of charity, since for Aristotle it is not the case that most of a person’s beliefs, simply taken as such, will be true—most beliefs will be true only in part and only when construed in a certain way (beyond just differences in reference). At the same time, Aristotle holds something stronger when it comes to perception, at least with regard to some. As I will presently show, he holds that *all* of a person’s most basic perceptions must be true without exception, though this is not essential to the present point, which is that the comparison with sealings suggests their general reliability.

⁷⁷ It is clear that perceptual *beliefs*, on the other hand, at least when they function as part of a practical syllogism (*EN* 7.3, 1147a25–26), *can* exercise authority over our actions (ἡ τελευταία πρότασις δόξα τε αἰσθητοῦ καὶ κύρια τῶν πράξεων, b9–10).

Elsewhere in the *Ethics* Aristotle is even more specific. Perception, he says, has authority over particulars (περὶ τῶν καθ' ἕκαστά ἐστιν, ὧν αἴσθησις ἤδη κυρία, 7.3, 1147a26): when it comes to apprehending how things stand in our environment, it is perception that provides the decisive information. In the opening of the *Metaphysics*, he goes even further and declares that our perceptions constitute the *most* authoritative knowledge of such things (καίτοι κυριώταται γ' εἰσὶν αὐταὶ τῶν καθ' ἕκαστα γνώσεις, 1.1, 981b11), even though they do not tell us *why* anything is the way it is (οὐ λέγουσι τὸ διὰ τί περὶ οὐδενός), such as why fire is hot (b12). But they do tell us *that* (ὅτι) it is hot and more generally how things are (b13). The task of natural science, he says in the *De caelo*, is to give an account of “what consistently appears authoritatively to perception” (τὸ φαινόμενον ἀεὶ κυρίως κατὰ τὴν αἴσθησιν, 3.7, 306a16–17).⁷⁸

The senses do not all possess the same authority in all cases, though. When they disagree, some are more authoritative than others (κυριώτερα, *Insomn.* 3, 461b4–5).⁷⁹ Sight, for example, has more authority than touch as regards the number of objects perceived (2, 460b20–23). But within its own domain, the authority of each sense is supreme: when I spy something sweet on the counter, it is still taste, and not sight, that is the final arbiter of its flavor (*Metaph.* 4.5, 1010b14–17).⁸⁰

Aristotle actually holds something even stronger. The senses have authority, in part, because each sense is *infallible* about certain objects, namely, the qualities that are intrinsically perceptible to it exclusively (ἴδια αἰσθητά). It is “not possible,” he says, for a sense “to be mistaken about” such things (περὶ ὃ μὴ ἐνδέχεται ἀπατηθῆναι, *de An.* 2.6, 418a12); consequently, the perception of them is “true” or “always true.”⁸¹ He is not saying merely that we do not make any general mistake

⁷⁸ The Greek text is taken from D. J. Allan's OCT edition (1965).

⁷⁹ Aristotle thinks we have a general predisposition to believe what is presented through the senses if there is no report from another sense that conflicts with it; and even when there is this sort of conflict, we may accept the deliverance of a given sense anyway, if our judgement (τὸ ἐπικρίνον) is impaired (*Insomn.* 3, 461a25–462a8, esp. 461b4–7).

⁸⁰ Kenny (1967: 192–93) rightly notes that for Aristotle sight *can* be mistaken about the color of an object, but nonetheless it can only be corrected by itself on another occasion, and not by another sense. But while Aristotle maintains that we can be wrong about the color *of* a given object, we are *not* mistaken about the color itself: see below, pp. 43–44.

⁸¹ *De An.* 3.3, 427b11, 428b11, b18; 3.6, 430b29; *Sens.* 4, 442b8–10; and also *Metaph.* 4.5, 1010b1–3, if we insert <μὴ> before ψευδής at b2, with both Ross and Jaeger. On one occasion, Aristotle qualifies this universal generalization (“or has the least falsehood”, *de An.* 3.3, 428b19); see below, pp. 49–50.

These strong formulations rule out two attempts to construe Aristotle's view more weakly, as holding either (a) that the senses have a kind of incorrigibility about their own objects or (b) that perceptions of these objects are not truth-apt or evaluable. For (a), see Kenny 1967: 193 and the comments in n. 80 above. For (b), see Kalderon 2015, who argues that there is no possibility of error in such cases “because the sensing of a primary object fails to be evaluable as correct or incorrect” (67), although he acknowledges the “potential embarrassment of explaining away” Aristotle's repeated use of “true” in these contexts “as merely loose talk” (68). On his view, Aristotle is a naïve realist, who thinks that we “simply confront” the perceptible quality; one cannot confront something correctly or incorrectly (68). Embarrassment isn't the issue, though, but

regarding the types of objects each sense perceives—for example, that what we see are colors and what we taste are flavors.⁸² Rather he is claiming that we do not make mistakes about *which specific* quality we are perceiving—his go-to examples are white and sweet—even though he thinks we do make mistakes about *which object* possesses it or about its *location* (418a15–16; *Metaph.* 4.5, 1010b19–21).⁸³ In fact, he is even more precise. He allows that (i) perception is not always true about *which sort* of object that has a color, for example, about whether what is white is a human (*de An.* 3.6, 430b29–30). But (ii) it can also be mistaken as to *which particular* object in our environment is white, whether “this, or something else, is white” (εἰ δὲ τοῦτο λευκὸν ἢ ἄλλο, 3.3, 428b21–22).⁸⁴ It follows from this, importantly, that we can be mistaken about the color of *an object*: when the distant mountains look purple, we are correct in seeing purple, but mistaken that the mountains are purple; their “proper” color (τὸ οἰκεῖον χρώμα) is different, perhaps a mottled brown and green.⁸⁵ In neither case, however, do we make a mistake about the colors themselves: the perception *that* it is white is not mistaken (ὅτι μὲν γὰρ λευκόν, οὐ ψεύδεται, 428b21); and seeing something exclusively perceived by sight, like

inconsistency. It is not just that the passages cited above all expressly mention truth, but that one of them further offers an extended discussion which correlates the truth *and falsehood* of perceptions of the three types of perceptibles with the truth and falsehood of the representations generated from them (*de An.* 3.3, 428b18–429a2) and thus concerns truth evaluability throughout.

⁸² As Hamlyn argues on conceptual grounds (1959: 12; Hamlyn 1993: 106 ad 418a11), with Kirwan (1993: 111) concurring; possibly also Ross (1961: 238), Osborne (1983: 406) and Vasiliou (1996: 123). Hamlyn himself acknowledges that it is difficult to know what to make of the view or its import; though for a more positive attempt, see Vasiliou 1996. Against this reading, see Kenny 1967: 191; Denyer 1991: 186–87; Johnstone 2015: 314; and Koons 2019, who treats the issue at very great length.

In addition to the textual evidence above, I would add two objections. First, Hamlyn cannot interpret the other passages we are considering here in an analogous way and so is forced to say that *De anima* 2.6 is making a distinct and independent point (1959: 12), which is highly implausible in light of the close parallels. But secondly, we cannot make sense of what intrinsic perception is supposed to get unerringly *right*, on Hamlyn’s interpretation. For Aristotle does not think that a single sense can intrinsically perceive the genus of its own exclusive perceptibles: he says in *Metaphysics* 13.10 that although sight does see the universal, color, it does so only extrinsically, because the particular color it sees *is* in fact a color (ἀλλὰ κατὰ συμβεβηκός ἡ ὄψις τὸ καθόλου χρώμα ὁρᾷ ὅτι τὸδε τὸ χρώμα ὃ ὁρᾷ χρώμά ἐστιν, 1087a19–20). (This poses a problem for Koons 2019 too, given his incautious formulation of “specific infallibilism” at 419.) If sight is infallibly right about anything, it is about which particular colors it happens to be seeing.

⁸³ Hamlyn in fact acknowledges (Hamlyn 1993: 106, 134) that Aristotle mentions a specific color, white, in passages outside of *De anima* 2.6, but does not revise his interpretation in light of this, instead holding (134–35) that *De anima* 2.6 makes a different point than 3.3, 428b18. See also Hamlyn 1959: 12, 15.

⁸⁴ A point rightly noted by Krips 1980: 83.

⁸⁵ Aristotle speaks of the proper color of an object at *De anima* 2.7, 419a2, 6 (cf. *HA* 5.19, 551b9); he also denies that transparent materials, like water, have their own distinctive (ἴδιον) color; rather they exhibit different colors at different distances, which they possess only extrinsically (κατὰ συμβεβηκός). He contrasts it with solid bodies with determinate boundaries, where “the appearance of their color” (ἡ φαντασία τῆς χροᾶς) is similarly determinate (*Sens.* 3, 439a18–19, b1–6, b12–14).

something white, is always true (τὸ ὄρᾱν τοῦ ἰδίου ἀληθές), though it is not always true with regard to whether it is human (οὐκ ἀληθὲς ἀνί, 3.6, 430b29–30).⁸⁶ The sense of taste likewise always reports truly about what is sweet (ἀεὶ ἀληθεύει περὶ αὐτοῦ [*sc.* τὸ γλυκὺ], *Metaph.* 4.5, 1010b23–26): when something tastes differently at different times, “there is actually no dispute about the characteristic, but just about that to which the characteristic belongs” (περὶ γε τὸ πάθος ἡμφισβήσεν, ἀλλὰ περὶ τὸ ὃ συμβέβηκε τὸ πάθος, 1010b19–21).⁸⁷ Though one can be deceived about common perceptibles, “regarding those exclusive to a sense one is not deceived, for example sight about a color or hearing about sounds” (περὶ δὲ τῶν ἰδίων οὐκ ἀπατῶνται, οἷον ἡ ὄψις περὶ χρώματος καὶ ἀκοή περὶ τῶν ψόφων, *Sens.* 4, 442b8–10; cf. *de An.* 3.3, 428b23–25). For convenience, we can call this most basic form of perception, of perceptibles intrinsic to a single sense exclusively, “sensation,” to distinguish it from other types of perception.⁸⁸

⁸⁶ Ross marks the passage as corrupt in both of his editions, but the MSS are in unanimous agreement. He does not explain his reservation, moreover; he might be concerned about the verb ὄρᾱν taking an objective genitive (τοῦ ἰδίου), following Beare (1906: 90 n. 2) and Hicks’ (1907: 524 ad loc.). But a genitive object, while rarer, is not without parallel: cf. LSJ 9, ὁράω, II.1.e.

⁸⁷ Against Hamlyn, when he claims that sight can be in error over which color is being seen (1993: 106).

⁸⁸ It bears emphasis that this is solely for convenience, since while Aristotle draws terminological distinctions between these different kinds of perception, he uses a single verb, αἰσθάνεσθαι, for them all. Moreover, I strenuously disagree with commentators, going back to Alexander of Aphrodisias (*De anima* 41.9), who think that for Aristotle the most basic form is the *only* form of perception, strictly speaking. (For discussion of Alexander, see Caston 2012: 15–16 and 148–49 n. 366.) When Aristotle distinguishes three types of perception in *De anima* 2.6, he regards them all as genuine forms of perception. What I have called “sensation” is simply the most central, fundamental kind, which is exactly what Aristotle means when he says that in their case, perception is said κυρίως, not “strictly”; and the essence of each sense defined in relation to it (*de An.* 2.6, 418a24–25). I defend this inclusive approach at greater length in Caston, “Aristotle on Perceptual Content” (under review).

I also disagree with Matthen 2019, who thinks that Aristotle’s view should be framed in terms of sensation for substantive reasons. He takes Thomas Reid’s distinction between sensation and perception as critical to our own understanding of these words, where sensation “lacks any essential intrinsic significance beyond itself,” while perception “*essentially and by its intrinsic nature* intimates the presence of something outside itself” (271, original emphasis). Even though he acknowledges that Aristotle was unlikely to have made this distinction, he nonetheless believes that Aristotle’s notion of *aisthēsis* is captured more accurately by “sensation” in Reid’s sense, and that it is a mistake to characterize it as perception, so understood. This couldn’t be further from the truth: Aristotle standardly characterizes the activity of our senses as being *of* qualities of objects in the external world, which they independently possess (see above, p. 43) and a number of times even says that the senses *report* on the qualities of external objects. Matthen, it should be noted, is consciously and deliberately being uncharitable: his central thesis is that Aristotle’s theory is hopelessly flawed in a way that was only corrected much later by geometrical optics and modern vision science. (He does not mention Aristotle’s remarks about geometrical optics or his own views in *Meteorology* 3). In the abstract, of course, an uncharitable reading might be correct. But surely it has to answer to the full range of texts. Otherwise it is just cherry-picking and prejudicial.

2.5.2 *The Basis of Infallibility*

Given the subsequent tradition, it might seem tempting to take Aristotle's claims as based on a contrast between the immediate contents of consciousness and our knowledge of the external world: even if we cannot know the causes of our experience, we can be certain about how things *appear* to us within experience, a contrast we find in the Cyrenaics and Pyrrhonists on down.⁸⁹ But this cannot be what Aristotle has in mind. For if we were infallible in that way, it would hold for perceptual contents quite broadly: I could not be mistaken that there appears to be a man in the distance or that he appears to be 100 yards away any more than that there appears to be something white.⁹⁰ Aristotle, however, is drawing a distinction between these kinds of appearances; and, as he vigorously maintains against Protagoras, not all appearances are true (οὐ πάν τὸ φαινόμενον ἀληθές, *Metaph.* 4.5, 1010b1–2). Aristotle is therefore not concerned with just the face value content of our experience, about what we seem to be experiencing, but with whether that content *accurately* matches up against the world. It is for just this reason, in Aristotle's view, that man is not “the measure of what is and what is not”—the world, rather, is the measure of man. Knowledge and perception can only be called “measures,” he believes, because they do measure up the way things are. But most appearances do not (*Metaph.* 10.1, 1053a31–b3).⁹¹

⁸⁹ Cyrenaics: Plutarch, *Adversus Colotem* 24, 1120c–f; Sextus Empiricus, *Adversus Mathematicos* 7.191–94. Pyrrhonists: Diogenes Laertius 9.104–6; Sextus Empiricus, *Outlines of Pyrrhonism* 1.4. Graeser 1978 may be a fellow traveller, when he says he is tempted to treat *sensibilia* as sense data because it would help explain why they are “practically liable to error,” though he adds that Aristotle's view “as it stands does not really qualify as a sense-data theory” for unstated reasons (91). Sorabji 2004: 82 and Schofield 1978: 119 (cf. 122) note that what Aristotle calls *aisthēmata* are a near equivalent to sense-data.

⁹⁰ As Block 1961: 3; Krips 1980: 83; and Ben-Zeev 1984: 120 correctly note. Kenny 1967 makes this point against what he calls the “Rylean” interpretation, though not, curiously, against the “Berkeleyan” one (191–92).

⁹¹ In this passage, Aristotle mischievously claims that what Protagoras *meant* in putting forward his measure doctrine was only that knowledge and perception are measures, the latter being something Aristotle takes to be obviously true and nothing to fuss about. But Book Kappa of the *Metaphysics* recognizes that the measure doctrine makes a more radical claim, namely, that whatever *seems* or *appears* to be the case is true (*Metaph.* 11.6, 1062b12–15). And while on that view such states would also qualify as knowledge and veridical perception, it would not be in contrast to other appearances' being false (as it would for Aristotle), since for Protagoras there are no false appearances. Therefore the most that Aristotle can claim in good conscience would be that his interpretation is the only charitable interpretation of the measure doctrine, because it captures the only part of Protagoras' claim that has a hope of being true.

Turnbull argues that Aristotle is nonetheless committed to a moderate form of Protagoreanism, at least as regards colors and other qualities that are exclusive to one sense, holding that they exist as such only in so far as they are being perceived, much like the “Secret Doctrine” in Plato's *Theaetetus* (155e–157c); and that for this very reason our perception of them is “logically” infallible, unlike our perception of spatial and temporal features (1978: 4–5). I argue against Protagorean interpretations at length in Caston 2018.

When Aristotle says in *Metaphysics* 4.5 that we never make a mistake about the quality itself (περί γε τὸ πάθος), but only about which thing it belongs to (περὶ τὸ ᾧ συμβέβηκε), he is making a claim about the quality present in the world (1010b19–21), *not* the quality or affection of the perceiver (τοῦ αἰσθανομένου πάθος), which he identifies as the perceptual stimulation (τὸ αἶσθημα, b33–34).⁹² The perceptible quality is something that is “different from and in addition to the perception” (ἕστι τι καὶ ἕτερον παρὰ τὴν αἶσθησιν, b36) and produces it (ἃ ποιεῖ τὴν αἶσθησιν, b34). In Aristotle’s view, then, the most basic form of perception, sensation, gives us unerring information not about our own state of mind, but about some feature of the world around us. Its report is *true* of some part of our environment, to which the quality sensed genuinely belongs.

This claim would be extremely implausible if it concerned the *distal* objects of perception. As Aristotle recognizes, objects often appear to have different colors at different distances no less than different sizes (*Metaph.* 4.5, 1010b5–6). The same wine can likewise taste different to a single perceiver at different times, depending on one’s condition (1010b21–23), since the same objects do not seem sweet to both a healthy person and a sick one, or hot to both someone who is debilitated and someone who is in good shape (*EN* 10.5, 1176a13–16). In all of these cases, the immediate conditions around the sense organ heighten or mask our perception of certain qualities. The bitter fluid that coats a sick person’s tongue makes everything taste bitter, in the same way that strongly flavored food temporarily makes it difficult to discern other tastes (*de An.* 2.10, 422b7–10). If this is how the conditions of the organ affect its sensitivity in general, then the errors involved will be just like what happens with rose-tinted glasses. Something similar can obviously be said about how the quality of the medium affects the mistakes we make about the colors of distant objects, such as the sun appearing crimson through mist or smoke;⁹³ or how differences in illumination lead weavers to choose the wrongly colored threads by lamplight, or how an object’s being placed next to different colors (even in perfectly normal conditions) can lead one to mistake the true color of the dyed threads.⁹⁴ The presence of perceptible qualities close to the organ or in the surroundings alters or masks the effect of qualities further away and prevents us from perceiving an object’s proper qualities. But our sense will still be accurately picking up the perceptible qualities *of something external* and will correctly instantiate its

⁹² The stimulation (αἶσθημα) is the modification of the perceiver (τοῦ αἰσθανομένου πάθος, *Metaph.* 4.5, 1010b33) or, as Book Kappa says, what is produced (ποιοῦντα) by perceptibles in the perceiver (11.6, 1063b4).

⁹³ *Sens.* 3, 440a10–12, cf. 439b5–6; *Mete.* 3.4, 370b10–11.

⁹⁴ *Mete.* 3.4, 375a22–28.

proportions.⁹⁵ The mistakes perception is liable to make only concern whether a

⁹⁵ The only possible exception is from Book Kappa of the *Metaphysics*, which describes cases where the quality an object appears to have is due solely to the condition of the organ. But the authenticity of Kappa is a matter of some debate. It undoubtedly stems from Aristotle's school, if not Aristotle's own hand. But for that very reason, it may be no more of a secure guide to Aristotle's views on precise details than Theophrastus is, who agrees with Aristotle extensively, but also develops and inflects his views in distinctive ways. So we cannot put great weight on evidence from Kappa without confirmation from other parts of the Aristotelian corpus, and it should not be used as the controlling element in an interpretation. For the debate over authenticity, see the valuable summary, with references, in Nielsen 2017: 304 n. 3. For a discussion of Theophrastus' Aristotelianism, see Caston 2019.

Chapter 6 of Kappa maintains that the same object does not appear (φαίνεται) sweet to some people and the opposite to others, unless someone's organ and "criterion" (κριτήριο) for flavors is "decrepit or damaged" (διεφθαρμένον καὶ λελωβημένον, 1062b36–1063a3); it later suggests that the very same object, without undergoing any change, can appear dissimilarly if the perceiver's condition is not similar to a healthy person's (τὸ μὴ ὁμοίως διακεῖσθαι τὴν ξῖν καὶ ὅθ' ὕγιανον) and so will produce different stimulations in those who are ill (1063a35–b6). This would fit with an interpretation that many have found tempting, starting with Alexander of Aphrodisias (*De anima* 41.13–42.3), that Aristotle thinks that sensation is infallible *only in normal conditions*, construed quite broadly: where one's organs are functioning as they ought, given their nature, in the external conditions for which they are naturally suited (situated at the right distance, without obstructions, in appropriate illumination, and so forth). For contemporary interpretations, see Block 1961, perhaps the earliest defense of a "normality theory of perception" on teleological grounds (5–9); also Gaukroger 1978: 106 (cf. 91–92); Gaukroger 1981; Ben-Zeev 1984; Charles 2000: 122–24; Johnstone 2015; Koons 2019; for some criticism, see Krips 1980. For discussion of Alexander's view with full references, see Caston 2012: 149–51; see also Johnstone 2015, who argues that Aristotle's position is "essentially the same" as Alexander's.

But this is largely wishful thinking. Even though one might have expected Aristotle to embrace a normality theory, given his emphasis on teleology, there is not a single passage in the rest of the corpus that explicitly says that sensation is true only in normal conditions, despite his having the language to do so, or even a passage that entails it. Aristotle, for example, never says that any perception is true "always or for the most part" (ἀεὶ ἢ ὥς ἐπὶ τὸ πολὺ), nor does he explain the reliability of the senses by reference to the end or function of perception; nor is there any reason to think that a teleological justification is entailed by the infallibility of sensation about which specific perceptible is being perceived (as Koons 2019 claims without argument at 436, 437), even if the converse were true. The best that can be done is to argue, as Barnes 1987 does (56–64), that a "schematic argument" can be reconstructed from Aristotle's teleological commitments. But it is a long way from saying that the *senses* are necessary for an animal's survival (e.g. *de An.* 3.12, 434a30–b2; *Sens.* 1, 436b18–a3)—or even the conjecture that they must be *generally reliable* for this purpose—to saying that they are *infallible* with respect to their sensations (as Barnes recognizes (1987: 66–68, 70–74; cf. 62–63), but Koons does not (2019: 431–34)), at least if "normal conditions" are specified in a substantive and non-circular way.

Kappa's claims about abnormal internal conditions, then, are something of an outlier. It is out of step in other respects too. (1) In claiming that the same object *never* tastes differently to different perceivers, except when an organ is decrepit or damaged (1062b36–1063a3), the first passage directly conflicts with *Metaphysics* 4.5, which acknowledges that there *are* disagreements about which flavor belongs to a given object, even for a single perceiver over time (1010b19–26); it only denies that one is mistaken about which flavor we are tasting. *De anima* 2.10, moreover, explains the mistakes made when ill as due to an external condition, namely, the bitter fluid suffusing the tongue (2.10, 422b8–10); and the second passage from Kappa (1063a35–b6) is actually compatible with this explanation. (2) The word κριτήριο, moreover, though commonplace in Hellenistic epistemology, is a *hapax legomenon* in Aristotle. Its use here is likely influenced by one of its two instances in Plato, at *Theaetetus* 178b6, whose context likewise concerns Protagoras' relativism. But one would still expect a term Aristotle uses more commonly like κρῖνον. It would not be surprising for a member of his school.

given quality belongs to this or that distal object, the same mistake Aristotle flags later in *Metaphysics* 4.5 (1010b20–21) and in *De anima* 3.3 (428b21–22).⁹⁶

The most that Aristotle can count on, then, is the character of the *proximal* stimulus, the condition of the medium where it is in contact with the organ and directly affects it. And it is easy to see why he might think that perception is infallible here.⁹⁷ When a sense is affected intrinsically by perceptible qualities exclusive to that sense (*de An.* 2.6, 418a24–25), the form it receives in that causal interaction is the very same active quality in question. There is *no room for deviation* in genuine sensations: the reception of a given form, *F*, in sensation could not come about from any other perceptible quality—a sensation of *F* could only come about by the action of *F* on the organ.⁹⁸ What justifies Aristotle’s commitment to the infallibility of sensation is not formal or teleological aspects of perception, but *efficient causal* ones: it does not derive from doctrines about the essence of the individual senses or their

⁹⁶ Johnstone (2015: 317) confuses these two questions, when he infers from (1) the claim at 1010b3 ff. that we can make mistakes about “the *true* size or color of a thing” or “the *true* flavor of a thing” (emphases mine) that (2) we can misperceive perceptibles like white or bitter. Aristotle clearly affirms that we can make a mistake about which properties belong to particular objects, but he denies that we are mistaken about the quality itself (*Metaph.* 4.5, 1010b19–21). A similar analysis applies to *Mete.* 3.4, 374b14–15 (cf. a18–19) and *Sens.* 3, 439b3–5, where Aristotle is again speaking of which colors in fact belong to certain distant objects, and other passages where a specific object appears to have a color other than its actual one due to surrounding colors or the condition of the medium (374b10–11, 375a22–28; *Sens.* 3, 439b5–10), or the sound of a given object appears differently due to disturbances in the medium (6, 446b6–9).

Johnstone dismisses my alternative as a stretch and as less charitable than his own (318 n. 18). But in fact mine closely mirrors the contrast in the *Metaphysics* 4.5 passage just cited (περί τὸ πᾶθος vs. περί τὸ ὅτι συμβέβηκε, 1010b19–21), which his discussion overlooks; and it preserves the consistency of the *Metaphysics* and *De anima* passages without having to supply tacit qualifications (such as “for the most part”), something his interpretation does not (319).

⁹⁷ Kenny (1967) comes close to this when he says “there is no room for a mistake between the detecting of the quality of sweetness in a thing, when it is there, and the identification of this quality as sweetness” (195), except for the phrase “in a thing.” As we saw above, Aristotle thinks that judgements that assign a quality to an object or a location can be mistaken. But with genuine sensations we are never mistaken that there *is* such a quality in the world.

⁹⁸ This may not be at odds with the thesis of “Fungibility” Matthen attributes to Aristotle, which holds that a sense could be in the exact same state as a result of a different *object* acting on it in sensation (2019: 277), since Matthen seems to be primarily concerned with different tokens of the same quality, whereas I am concerned with different types. But he may intend a broader version of Fungibility that would conflict: at 278, he asserts that it is possible for a green object to produce the effect a blue one would, due to the interference of certain unspecified conditions; but he fails to take into account the sorts of conditions Aristotle considers, discussed above. Matthen’s observation that we can be mistaken about which object a sensation comes from, on the other hand, is something Aristotle himself emphasizes (see p. 43 above) and is not in question here. It is also not evidence that Aristotle is only concerned with sensations in Matthen’s sense. Aristotle emphasizes that what we *perceive* are public, external objects at *Sens.* 6, 446b22–23 (see n. 34 above). The most Matthen can claim is that Aristotle is not *entitled* to think this, not that he doesn’t think it. On whether the same qualitative state can be produced outside of sensation by other means, see n. 101 and p. 50 below.

normal functioning,⁹⁹ but rather his view that sensation is just an instance of agent-patient interactions more generally, where the exact same quality active in the agent, *F*, is received by the patient as a result of the interaction.¹⁰⁰ This is no less true where *F* is received “without the matter”: even though we do not ourselves embody *F* in such changes, but only other forms essentially related to it, in Aristotle’s view we nonetheless receive *F*. Sensation is always about what brings it about, namely, the intrinsic and exclusive perceptible quality that is present and directly acting on the sense organ; it thus *covaries strictly* with its *proximate cause*.¹⁰¹ There is no ambiguity in the signal in sensation: it yields unequivocal information about some part of the surrounding world. A sensation will therefore always be true of some proximal stimulus; and if conditions are right, it might tell us something accurate about the distal object as well. Aristotle seems to be fairly optimistic that this is what generally happens: the way we are affected by the medium by and large gives us evidence that identifies the character of distal objects. But as we have seen, he also acknowledges that it is not universally the case. We do make mistakes about which properties belong to a given distal object, because we sometimes take it to have characteristics due in part to how we are affected by intervening conditions.

The only phenomenon Aristotle discusses that might cause hesitation here would be afterimages, where after prolonged exposure to something bright we seem to see changing patches of color that are not due to any external stimulus currently acting on our eyes. Such a case might lead someone to question the claim that sensations are always true, since it can occur in “normal” conditions, where the perceiver’s sensory apparatus is in working order, the medium well-illuminated and unobstructed, and surrounding objects at a good distance to be observed. It is to address this sort of case, I suggest, that Aristotle adds an eirenic qualification towards the end of *De anima* 3.3 when discussing the truth of sensations, so as not to have to go into the issue more deeply there: perception of exclusive perceptibles, he says, is true “or possesses the least possible amount of falsehood” (ἢ ὅτι ὀλίγιστον ἔχουσα τὸ ψεῦδος, *de An.* 3.3, 428b18–19). For he continues as though no qualification had been made at all: he says of the next case, perceiving an object to have an extrinsic characteristic, that “it is *at just this point* that it is possible to be mistaken” (καὶ ἐνταῦθα ἤδη ἐνδέχεται διαψεῦσθαι, 428b20). As Jonathan

⁹⁹ For an appeal to formal causes, see Marmodoro 2014: 85–86; for an appeal to final causes, see the list of commentators who interpret Aristotle’s view in terms of normal conditions in n. 95 above; and for discussion pitting the two against each other, see Koons 2019, esp. 430–40. As Koons points out, appeals to the essence of the senses cannot justify more than infallibility about the genus of a sense’s perceptibles (on which, see n. 82 above). But teleological justifications far overshoot their mark: while teleological considerations might plausibly require a certain reliability for survival, they in no way require infallibility (against Koons 2019: 431, 432, 437). See n. 95 above.

¹⁰⁰ For a detailed examination of Aristotle’s views about the efficient causal role of perceptible qualities, see Caston 2018.

¹⁰¹ Because there may be similar states, produced by other causes, that are *not* sensations (see below, p. 50), the relation between cause and effect will be many–one; hence the covariation will be in one direction only.

Barnes points out, Aristotle's choice of words "strongly suggests that falsity is impossible in the case of proper objects."¹⁰² If so, it is a modal claim much like the one in *De anima* 2.6 (418a12–13). So there is no departure from his view elsewhere.

That Aristotle had phenomena like afterimages in mind seems to be confirmed by the sort of case he describes a few lines later: a representation generated from a sensation will be true while the sensation is present (παρούσης τῆς αἰσθήσεως); falsehood is possible only if it persists after the current sensation ceases (*de An.* 3.3, 428b27–28; cf. 3.2, 425b24–25). So it is no surprise that when he discusses afterimages explicitly in *De insomniis* (2, 459b7–13), he does not treat them as sensations at all, but he takes them to be evidence of *phantasia*: they are a quasi-perceptual experience, due to the original stimulation persisting in our organs after the external stimulus has ceased and possibly undergoing further alterations.¹⁰³ Afterimages do not, therefore, constitute a genuine exception to the unqualified claim he makes on every other occasion, that sensations are always true, even if they might seem so at first glance. When we are actually perceiving, and not merely having some quasi-perceptual experience, the only mistakes we make about perceptibles exclusive to a single sense concern where they are located in our environment and whether they in fact belong to some given object.

This is not to say that the same pattern of stimulation of the sense organ could not be produced by other means than the direct action of perceptible qualities in the environment on our senses. Aristotle plainly thinks it is possible to bring this type of stimulation about in other ways. If that happens, it will result in an experience *like* sensation, even though nothing in our vicinity has the perceptible quality in question. Such states would not be genuine sensations, though, but merely like them, in that they would be qualitatively similar to sensations and purport to be from external objects; and for just this reason we can be misled by them (*Insomn.* 3, 461a25–b2).¹⁰⁴ They are like a fraudulent sealing: although it purports to be from the proper authority, its origins are in fact deviant and its authority void, even if someone accepts it as genuine. Aristotle not only acknowledges this possibility, he exploits it in order to explain error (*Insomn.* 2, 460b22–25). For him the crucial point, though, is that this sort of experience is not a genuine sensation, but involves *phantasia*, and so it is not a counterexample to his claims about infallibility. This will raise sceptical worries of the sort that would later come to be called the "problem of the criterion," of how we can *tell* which of our experiences are the veridical ones. But for Aristotle the importance of infallibility is not anti-sceptical. He never attempts to build a certain and indubitable foundation out of the infallible reports of sensation. Its importance lies rather in sensation's role *as a transducer*. For however

¹⁰²Barnes 1987: 55 n. 14. Shields (2016: 291) likewise recognizes that this claim "implicitly rescinds the qualification" at 428b19, which he had earlier regarded as "a significant divergence" (290). Hicks seems cognizant of the difficulty when he says that the second case is the point where "serious error becomes possible" (1907: 471 ad loc., my emphasis). But the Greek does not hedge in the way Hicks needs it to.

¹⁰³See Caston 1998: 272 n. 56.

¹⁰⁴Against Matthen 2019: 279.

limited reports of proximal stimulations are, they are still a source of genuine and unequivocal information about our immediate environment. And this is necessary if his account of intentionality is to get off the ground.¹⁰⁵

2.6 Conclusion

When Aristotle characterizes each sense as a capacity for “receiving form without the matter,” he is concerned with intentionality after all, as the Neoscholastics had alleged. The senses are capable of receiving information about the world and this, in his view, sets their activity apart from most other natural processes. But there is nothing ghostly or immaterial about it: perception is something fully realized by material events in an animal’s organs. It is a form of transduction, where the perceptible form of an object is received not by embodying and replicating it, but by preserving certain essential features of it, exemplified in different material qualities.

Such transduction carries authority, like the sealing impressed in wax, because of the way in which it is produced. In a genuine sensation, a particular effect on the organ can be brought about only by the perceptible quality itself; therefore, if we are having a sensation, we cannot be misinformed about the presence of the quality in the environment. This, Aristotle believes, provides a sufficient basis for perception’s more general authority about particulars, even though we can and sometimes do attribute such qualities to the wrong things. For when we attend carefully to the deliverances of sense more broadly, they still provide a reliable guide for both survival and knowledge. Such epistemological optimism is not his primary concern, though, but intentionality. The infallibility of sensation anchors the content of our intentional states. For however widely these may range, they are tethered to actual features of the world.¹⁰⁶

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¹⁰⁵ Johnstone 2015 says he sees “no principled reason why” Aristotle could not allow error in such cases. But presumably this counts as a principled reason.

¹⁰⁶ I am grateful to many people for the comments and criticisms on earlier drafts, especially the detailed remarks of Rachel Barney, Matt Evans, Sean Kelsey, Baron Reed, and Michael Wedin, as well as to audiences at Santa Clara University, Humboldt-Universität zu Berlin, University of Victoria, University of Michigan, Yale University, University of Arizona at Tucson, University of Colorado at Boulder, Oakland University, Northern Illinois University, University of Pittsburgh, and Renmin University (Beijing).

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Chapter 3

Aristotle on Perception as Representation



Todd Ganson

Abstract Aristotle speaks of perception as having a content that is assessable in terms of truth and falsity. Why might Aristotle have been drawn to a view of perception as representational (as opposed to presentational) in nature? That is the question I aim to address in this paper. I am inclined to think that Aristotle takes perception to be representational rather than presentational because perception sometimes involves having in mind things which are not, strictly speaking, present.

3.1 Introduction

Aristotle speaks of perception as having a content (*de An.* 2.6, 418a15; 3.3, 428b21), one that is assessable in terms of truth and falsity (3.3, 427b11–12; 3.3, 428b18–21; 3.7, 430b29–30; *Metaph.* 4.5, 1010b2–3). On one interpretation of Aristotle’s theory of perception, he is expressing commitment to the idea that perception is similar in character to belief. Like belief, perception takes a stand on how things are in the world, and what it says about the world—the content of perception—is appropriately assessed in terms of correctness, accuracy, or veridicality. Like belief, perception is *representational* in nature.

This interpretation contrasts with a reading of Aristotle according to which perception is *presentational* in nature rather than *representational*. On this interpretation, perception is a matter of being presented or acquainted with items in the environment. Accordingly, perception is not the sort of thing that is appropriately assessed in terms of correctness, accuracy, or veridicality. As Mark Eli Kalderon says in characterizing Aristotle’s view, “we simply confront the primary object of the given modality. We cannot be confronted truly or falsely, correctly or incorrectly. We simply encounter what is presented [...]”¹

¹ Kalderon 2015: 175.

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We can sharpen the contrast between these two interpretations by reflecting on why belief is generally regarded as a form of representation rather than a form of presentation. Part of what makes it natural to regard belief as representational in character is the fact that belief routinely involves a stand-in for something that is not present. Suppose Fred wants the beer he has stored in his refrigerator. The beer Fred desires is not *present* to him; it is *absent*. At the same time Fred is able to have the beer in mind. He is able to *represent* the beer. Fred's mental representation of the beer serves as a kind of stand-in for what is not present, a stand-in that is useful in guiding Fred's beer-consuming behavior. Fred's mental representation of the beer amounts to a kind of *presence in absence*.

One important explanatory role played by Fred's representation of the beer is its role as the proximal cause of voluntary behavior. Figuratively speaking, we might say that the beer itself is what *moves* Fred towards the refrigerator. In speaking this way we are not committed to a spooky sort of action at a distance. Or suppose that Fred's beer was consumed some time ago by Fred's housemate. In this case we should not wish to suggest that there is no cause of Fred's behavior. Rather, the proximal cause of Fred's voluntary behavior is something present in Fred, his mental representation of the desired beer. Something present (not absent) is the proximal cause of Fred's behavior.

It is easy to understand why philosophers are sometimes resistant to thinking of perception as representational in nature. We are inclined to acknowledge mental representation when we think a creature is guided by a mental stand-in for something absent. Perception seems to be directed towards what is present, not what is absent. So it is initially unclear why perception would involve presence in absence, a hallmark of representation.

The issue here is especially pressing when we ask why Aristotle would be attracted to a representational view of perception. Aristotle is careful to distinguish perception from imagination and belief, partly on the grounds that the latter differ from perception in being susceptible to falsehood (e.g. *de An.* 3.3, 428a11–19). With imagination and belief suited to play the roles of stand-ins for things absent, it is initially unclear why Aristotle would be drawn to a representational view of perception.

Perhaps Aristotle's considered or official view is that perception is not representational in character. I am not going to take a stand on this issue of interpretation here. My goal in what follows is the modest one of calling attention to a couple of contexts in which Aristotle seems to be tempted by a representational way of thinking about perception, contexts in which he seems to allow that perception can involve a kind of presence in absence. Even if Aristotle's considered view is that something like imagination or belief is required to go beyond what is immediately present, it is nonetheless interesting to see Aristotle flirting with the idea that perception is a richer, more flexible resource, one capable of transcending what is immediately present.

3.2 Primitive Agency

Aristotle's explicit goal in the opening chapter of *De motu animalium* is to provide a general account of animal movement. The account of unforced movements developed in Chaps. 6, 7, 8, and 9 appeals to two capacities alleged to be peculiar to animals: desiderative and discriminative capacities. The latter include sensory, imaginative, and rational capacities. Non-human animals lack rational capacities and consequently belief (*de An.* 3.3, 428a18–24). Nonetheless, sensory states are able to play a role in initiating movement similar to the role beliefs play in creatures capable of reasoning (*MA* 6, 700b17–21; 7, 701a29–36). Animal sensory states are able to interact with desires so as to yield unforced movements towards desired goals. The senses interact with desire by revealing the pleasant and the painful, the objects of animal desire. The subsequent responses are pursuit and avoidance, respectively (*de An.* 3.7, 431a8–9).

In this section I am interested in this most primitive form of agency: unforced movement guided by perception without the aid of imaginative or rational capacities. To count as unforced a creature's movement has to issue from its motivational set (*EN* 3.1, 1111a22–b3), unlike movement due to the wind or seizure. Desire is not itself a further discriminatory capacity, so what is desired in primitive agency must be grasped by sense and sense alone. Acknowledging unforced animal movement guided by perception alone (primitive agency) is to acknowledge that perception can represent something not immediately present, a target of primitive agency. In that case perception would involve an interesting form of presence in absence. As we shall see, there is indeed evidence that Aristotle is prepared to acknowledge a role for perception in grasping distal targets of voluntary behavior.

The movement of honeybees to distant flowers serves to illustrate the kind of presence in absence I have in mind. Like all non-human animals, honeybees lack the capacity to reason. In one passage Aristotle also claims that they lack imagination (*de An.* 3.3, 428a10–11²), but it is unclear whether this passage captures Aristotle's considered view. (For example, at *de An.* 3.11, 434a5–7 Aristotle seems to be more generous on the issue of which animals possess imagination.) Whether or not Aristotle takes bees to possess imagination, he accounts for their movement towards distant flowers, a source of food, on the supposition that bees are guided in their pursuit by smell (*HA* 4.8, 534b19). Aristotle notes that animals attracted to something by its pleasant odor are sure to find its flavor pleasant as well (*HA* 4.9, 535a11). But what motivates the honeybee to travel to the flower is not a representation of food as such. It has no means to cognize some distant item as food. Rather, the bee is attracted to the flower thanks to its pleasant smell. What is strictly present to the bee at the start is the odor of the distant flower, not the flower itself. But what the bee desires is the presence of the fragrant flower, not the presence of the odor. The odor it smells is already present! The bee smells the fragrant flower as well, comes to desire it, and flies toward it.

²All extant manuscripts support this reading.

There are two central ways that the role of perception in primitive agency is analogous to the role of belief in humans. First, perception and belief both allow a creature to have in mind a target of goal-directed behavior which is not, strictly speaking, present. So just as Fred's belief about the beer stored in his refrigerator provides a target for Fred's beer-consuming behavior, the bee's olfactory perception of a distal flower affords a target for its locomotive behavior. Second, what perception and belief *say* about their objects is analogous: "Perceiving is basically like asserting or thinking. When the thing perceived is pleasant or painful, <the animal>, as if affirming or denying, pursues or avoids the thing perceived."³ Perception of an object as pleasant or painful plays the same basic role in an animal like the bee as affirmation or denial play in thinking creatures like us: "Whenever <thought> asserts or denies things to be good or bad, it avoids or pursues them."⁴ What is common to perception and thought here is that they take an evaluative stance on their objects and thereby engage a creature's desiderative side. This ability to perceive, imagine, or think of objects in positive or negative ways gives rise to desire, which, in turn, gives rise to animal movement: "In this way, then, animals are impelled to move and act—the proximate cause of movement is desire and the desire arises either through perception or through imagination and thought."⁵

In drawing these comparisons between perception and thought, Aristotle is careful not to over-intellectualize the cause of animal movement. The bee's movement toward distant flowers is *not* due to a rational interaction between contents of perception and desire. Non-human animals are incapable of reasoning, so Aristotle is *not* suggesting that unforced animal movement is due to the sort of reasoning exhibited by creatures like us with a belief-desire psychology, i.e. reasoning from our desires and our point of view on how things are to a course of action. Rather, the perception of an object as pleasant elicits an appetite for that object, and the appetitive desire, in turn, is the proximate cause of the movement. Aristotle seems to think that these motor responses can be triggered by desire without the motor responses being at all represented by the animal. There is no suggestion that honeybees, for example, grasp causal means or their own causal efficacy.

So Aristotle's assimilation of perception to thought requires only that perception sometimes (i) affords a grasp of objects that are spatially absent and (ii) takes an evaluative stance on those objects. My main focus in this section is on the first feature of perception, but I will also briefly return to the second feature at the end of the section.

Aristotle is evidently attracted to the view that olfactory perception can allow a creature to have in mind two distinct items: an odor which is present and an odorous object which is absent. I am making two key assumptions. First, I am assuming that perception by itself is sufficient to grasp or have in mind the distal target of primitive, locomotive agency. No further discriminatory capacity is needed. The bee

³ *De An.* 3.7, 431a8–9.

⁴ *De An.* 3.7, 431a15–16.

⁵ *MA* 7, 701a31–36.

smells the pleasant object, i.e. the fragrant flower, and flies towards it. Second, I am assuming that primitive, locomotive agency of this sort is initiated by the presence of the flower's odor in the absence of the flower itself. The flower's odor is present to the bee, and the flower itself is not. These assumptions are controversial, so I need to say a few words in defense of my reading.

My first assumption is evidently rejected by Jessica Moss.⁶ According to Moss, sensory states are not able to interact with desire so as to produce unforced movement from place to place. On her reading, Aristotle supposes that animals capable of locomotion must possess imagination or reason. When the object of desire lies at a distance from the animal, the object cannot be presented as pleasant by the senses and so cannot become an object of desire. The distal item must be cognized as pleasant by the imagination or reason. Unforced animal movement depends in each case on acts of imagination or reason.

I find Moss's interpretation difficult to reconcile with the evidence. First, her reading is not easy to square with *De motu animalium* 6, 700b19–20 and 7, 701a29–30. In both passages Aristotle is evidently claiming that perception can play the same role that imagination and thought do in animal movement. Second, in the following passage Aristotle explicitly links pursuit and avoidance with perception of sense objects as pleasant or painful: "Perceiving is basically like asserting or thinking. When the thing perceived is pleasant or painful, <the animal>, as if affirming or denying, pursues or avoids the thing perceived."⁷ Pursuit and avoidance are clearly understood here to be unforced movements towards or away from the things perceived to be pleasant or painful. Third, Aristotle explains the goal-directed locomotion of bees towards flowers by appeal to the sense of smell, not by appeal to imagination. Finally, Moss's worry that the senses cannot present distant items as pleasant or unpleasant is mistaken. Aristotle clearly allows that distance senses present distal items as desirable or undesirable (e.g. *de An.* 2.9, 421a13–15 and *HA* 4.8, 534b19).

My second assumption is rejected by Alexander of Aphrodisias, who takes Aristotle to be committed to the view that odor is present only in objects. On this reading, odor is not present in the air contiguous with the bee; rather, it is present in the distant flower. So this interpretation goes hand-in-hand with rejecting the contrast I am drawing between the presence of the odor and the absence of the odorous object. I have critically examined Alexander's reading at length elsewhere,⁸ so I will limit myself to a couple of brief replies.

First, Aristotle supposes that air itself, understood as a medium of olfactory perception (*de An.* 2.7, 419a32–b1 and 2.9, 421b9), is an object of smell (*de An.* 2.12, 424b17–18, *Sens.* 5, 442b29–443a2, and 445a11–12). Second, Aristotle tells us that odor is present in the air we breathe (*Sens.* 5, 444a22). Indeed, Aristotle's definition of odor (at *Sens.* 5, 443a6–7) has the consequence that odor is present *only* in the

⁶Moss 2012: chapters 2 and 3.

⁷*De An.* 3.7, 431a8–9.

⁸See Ganson 2002.

medium—air or water. On Aristotle's account of odor, air and water come to have odors present in them thanks to the cleansing and washing action of their moisture on the flavored dry thing (*Sens.* 5, 442b29–443a2). Odors, then, are not present in solid, earthy objects; they reside only in air and water.

I conclude that there is an important sense in which a bee's perceptually guided pursuit of a fragrant flower is guided by the perception of something absent. What is present to the bee is the odor of the flower, something present at the sense organ. But the sense of smell simultaneously allows the bee to have in mind something absent, namely, the fragrant flower, for smell is a distance sense which allows a creature to locate distal food sources (*de An.* 2.9, 421b9–13). In primitive agency perception itself allows the creature to have in mind something that is, strictly speaking, absent. The pursuit and avoidance behaviors manifest in primitive agency are fundamentally different in kind from forced behaviors like those due to tremors or spasms: the behaviors issue from a creature's desires. In order for the creature to be moved in this voluntary manner by the distal object, it must perceive the object as pleasant or painful. The creature may or may not possess discriminatory powers beyond perception, but it is perception that allows the bee to grasp the pleasantness or unpleasantness of the object of desire. So perception, too, like imagination and reason, must afford a grasp of things absent. For, unlike the odor itself, the object of desire is not present.

Mental representation is routinely invoked to account for successes and failures of goal-directed activities. So far I have focused on successes of primitive agency: the bee succeeds in arriving at the fragrant flower thanks to having a sensory representation of it. But what about failures? Does Aristotle ever explain an animal's failure to get what it wants by appeal to sensory misrepresentation?

Sometimes animals miss the mark in their goal-directed behavior, and sometimes Aristotle explains the error by tracing it back to deficiency at the sensory level. Here are a couple of examples. First, if you move your finger just so, thanks to its weak eyesight a cicada will mistake your finger for a moving leaf and proceed to climb it (*HA* 5.30, 556b18–21). Second, due to the weak illumination at dawn and dusk fish are readily deceived by their eyesight, making it harder for them to avoid the traps of fishermen (*HA* 8.19, 602b7–12). On one reading of these passages, Aristotle's explanations presuppose a view of sensory states as states with contents that can be accurate or inaccurate. That is, Aristotle is relying on a representational view of perception.

It is clear that Aristotle attributes some failures in goal-directed agency to deficiencies at the sensory level. However, the deficiencies in question need not take the form of inaccuracy or misrepresentation. What Aristotle tends to focus on is loss of acuity. He is careful to distinguish two cases (*GA* 5.2, 781a14 ff.): (i) failure to perceive a perceptible object because of distance from that object, and (ii) failure to discriminate perceptible features because of inferior sense organs. A failure of the first sort amounts to a failure to have something in mind at all, and in cases of this sort we have no reason to acknowledge misrepresentation. Failures of the second sort are more complicated. Aristotle explains at *De anima* 2.9, 421a10 ff. that our human organ for smell is lacking in acuity, and as a result we tend to perceive crude

differences in how pleasant or painful the object of perception is, differences which depend on a creature's constitution (*HA* 8.2, 589b3 ff.). The same goes for other creatures whose color vision is poor (*de An.* 2.9, 421a13–15). It seems that the creature's failure to perceive some difference in the world is due to its having in mind instead something perceiver-dependent. But even here it is doubtful that Aristotle would attribute failure of discrimination to inaccuracy at the sensory level.

Aristotle is not in the habit of invoking sensory misrepresentation in order to account for failures of goal-directed behavior. However, there is reason to think Aristotle is sympathetic with the idea that sensory states can misrepresent the world. I turn to the relevant evidence in the following section.

3.3 Illusion

One important question about perception is why things appear the way they do in perception—what factors shape or determine sensory phenomenology. On a presentational approach, the central factors determining how things appear in perception are (i) the items present to the senses and (ii) the perceiver's point of view on those items. On Kalderon's interpretation, Aristotle endorses this presentational approach to the phenomenology of color perception:

In being present in the awareness afforded by visual experience, the color constitutively shapes that experience. The character of that experience depends upon and derives from the character of the color presented to the perceiver's point of view.⁹

The particular instances of color in the scene before the eyes are not just causal antecedents to color perception; those very color instances are constitutive of the character of experience. The experience would not have the phenomenal character it has if there were no such color instances present.

This view contrasts sharply with the view that the character of experience is shaped by perceptual *content*, something that can be *present* even when the colors before your eyes are *absent*. What fixes the character of sensory phenomenology is how perception represents the world. I am going to suggest that Aristotle's remarks on the phenomenology of illusion fit more naturally with this representational approach than with a presentational approach.

Before I elaborate on this point about Aristotle, I want to raise a worry about the presentational approach to phenomenology. It will help to make my worry vivid if we reflect on the following possibility described by Oxford psychologist Brian Rogers:

We can imagine a device (a spectrometer display?) that creates the same pattern and distribution of wavelengths as those created by a real scene [...]. If you like, we could call all

⁹Kalderon 2015: 179.

these situations ‘facsimiles’ because the pattern of light reaching our eyes is a facsimile of the pattern of light created by a real scene [...].¹⁰

A facsimile is an artificially generated proximal stimulus that is an exact match for a proximal stimulus issuing from a natural scene. Although we are not currently capable of generating facsimiles, there is no reason to doubt that facsimiles are physically possible. Facsimiles generate a straightforward difficulty for the presentational approach to visual phenomenology. Suppose we were to expose subjects first to a natural scene and then to a corresponding facsimile. All else equal, the two stimulus situations would give rise to visual states with the same phenomenal character. Consequently, the distal items populating the natural scene prove to be superfluous to the explanation of phenomenal character. We can state sufficient conditions for the presence of experience with that character without any mention of the distal stimuli.

Why suppose that facsimiles will have the same phenomenal consequences as corresponding proximal stimuli issuing from natural scenes? The reason is simple: no visual system could be sensitive to the difference between these two contrasting stimulus situations. This is a point emphasized by Rogers:

Another way of asking the same question is—“does it matter how the pattern of light reaching the eye is created?” If the pattern of light is identical (“projectively equivalent” [...]), over both space and time, then it must be true that no seeing machine, biological or man-made, could ever tell the difference.¹¹

No vision scientist would seriously question this claim.

On the presentational approach to the phenomenology of color experience, the distal items in the scene before the eyes figure constitutively in the phenomenal character of visual experience. The presence or absence of those items makes a difference to the character of experience. Accordingly, the view predicts that facsimile scenarios would yield experiences with a different type of visual phenomenology from the type which belongs to our everyday visual perceptions. The problem is that the presentational approach is committed to a visual difference where there could be no visual difference. A natural scene and its corresponding facsimile scenario are projectively equivalent. No visual system relying solely on visual inputs could be sensitive to the difference between these stimulus situations.

The representational approach has an advantage here because it has a straightforward way of addressing facsimiles. On the representational view, visual phenomenology is determined by sensory content. The advocate of this approach can insist that a facsimile and its correlate scene give rise to the very same content and so the very same visual phenomenology. No difficulty arises.

There is reason to think that Aristotle is sympathetic with the view that phenomenology is fixed by proximal causes, and is not constituted by distal items. Consider

¹⁰ Rogers 2010: 286. I should note that Rogers invokes the possibility of facsimiles for a different purpose: he is not discussing a presentational approach to phenomenal character.

¹¹ Rogers 2010: 285.

his explanation of the tactile illusion that has come to be known as *Aristotle's Illusion*:

The explanation of this deception (*diepseusthai*) is that things appear (*phainetai*) a certain way not only when the sense object moves <the sense> but also when the sense itself is moved, provided it is moved in just the way it is also moved by the sense object. For example, the earth seems to be moved to those sailing by when it is sight that is moved by something else.¹²

Note first of all that Aristotle describes the illusion as involving a sort of *falsity* (*diepseusthai*), a way of talking very much in line with the representational approach. More important, he expresses commitment to the view that phenomenology is fixed by proximal causes. It is difficult to see how to reconcile this passage with the presentational approach.

Many familiar illusions illustrate the phenomenon of presence in absence. For example, the waterfall illusion discussed by Aristotle (*Insomn.* 2, 459b18–20) is naturally described as involving the mental representation of motion in the absence of motion. Here we have one of the standard considerations in favor of taking perception to be representational in nature.

Perhaps Aristotle's official view is that error cannot occur in the absence of imagination.¹³ Perhaps his considered view is that the senses cannot *misrepresent* the world. I have not taken a stand on this issue. In this section I have argued that Aristotle's explanation of Aristotle's Illusion is philosophically more in keeping with a representational view of perception than a presentational view. At least *to that extent* Aristotle is sympathetic with a representational view of perception.

3.4 Concluding Remarks

In this paper I have sketched some answers to the question of why Aristotle might have been attracted to a view of perception as representation. My strategy has been to highlight some ways that perception, for Aristotle, seems to involve having in mind something that, strictly speaking, is absent. This strategy rests on the idea that talk of *representation* is in order precisely when we think a creature is able to have in mind things that are not present to it. In my concluding remarks I want to address briefly a consideration on the other side, a consideration in favor of taking Aristotle to be sympathetic with a presentational approach to perception.

The presentational approach is often thought to capture something important about our pretheoretical understanding of perception. We naturally take perception to be rather different in character from thought. Whereas thought relates us to abstract entities that are bearers of truth and falsity, we take perception to relate us to objects that are bearers of sensible qualities like color and odor. Accordingly, the

¹² *Insomn.* 2, 460b22–27.

¹³ Cf. Caston 1996.

representational approach, with its assimilation of perception to thought, is plausibly regarded as a somewhat revisionary position.

The view of perception as representation is so widely held among philosophers today that it is easy to forget just how revisionary the view is. Accordingly, I want to quote at length some relevant remarks by Adam Pautz, a proponent of the view. (Note that he speaks of *the intentional view* rather than *the representational view*.)

The general naïve intuition is that [perceiving a tomato] is a being related to *an actual state of the world*, namely, the redness and roundness of an object. By contrast, on the intentional view, [perceiving a tomato] is a matter of being related to an *intentional content*. Such an intentional content is radically different from a state of the world. Indeed, it lacks all of the properties enumerated above:

It would continue to exist even if there were no red and round objects.

It is unextended and is not located in space before one.

It is true or false.

It cannot be seen.

Pretheoretically, the intentional view that your [perceiving a tomato] consists in being related to such a peculiar item, as opposed to the concrete redness and roundness of the object before you, is very counterintuitive.¹⁴

Indeed, the representational view is counterintuitive enough that we can reasonably wonder whether Aristotle, the common-sense philosopher, would be drawn to it.

The thing to keep in mind is that Aristotle is assimilating thought to perception as much as (or perhaps even more than) he is assimilating perception to thought. Just a few lines after saying that perceiving is like asserting or thinking, he writes: “To the thinking soul images serve as sensory states (*aisthēmata*). When it affirms or denies good or bad, it either pursues or avoids. For that reason the soul never thinks without an image.”¹⁵ Of course, this is one among a variety of passages in which Aristotle expresses his commitment to the empiricist view that all thinking depends on images ultimately deriving from perception (e.g. *de An.* 3.8, 432a3 ff.). This image-based view of thinking allows Aristotle to extend his general account of animal action to humans. As Aristotle explains at *De anima* 3.7, 431b2–10, humans are moved to pursue or avoid an object when thought, exploiting images, says an object is pleasant or painful in just the way perception does. It is hardly surprising that an empiricist like Aristotle is committed to deep continuities between perception and thought, including phenomenological continuities.¹⁶

¹⁴ Pautz 2010: 292–93.

¹⁵ *De An.* 3.7, 431a14–17.

¹⁶ I wish to thank the members of the Representation and Reality project for the opportunity to present this paper at the Mechanisms of Sense Perception conference and for useful comments on the penultimate draft. I also received valuable feedback from several participants, especially Mark Eli Kalderon, Victor Caston, and John Morrison. Finally, special thanks to David Bennett and Juhana Toivanen for all their work in producing this volume.

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Chapter 4

Reply to Ganson



Mark Eli Kalderon

Like trains of cars on tracks of plush
I hear the level bee:
A jar across the flowers goes,
Their velvet masonry
Withstands until the sweet assault
Their chivalry consumes,
While he, victorious, tilts away
To vanquish other blooms.

Emily Dickinson, *The Bee*.

I am very grateful to Todd Ganson for his comments. Ganson presses two problems but spends the bulk of his time on the second. I will ignore his first problem concerning illusion and focus, after an initial set up, exclusively on the second problem concerning primitive agency. I do this not because I believe that the first problem is unimportant. Far from it. One of the disappointing aspects of Hilary Putnam's (2012) reply to Victor Caston (1998) is that he ignores Caston's use of the *De insomniis* passage, cited by Ganson, to argue that Aristotle is not a proto-disjunctivist. So I take it that there is important unfinished business here. Rather, I ignore the first problem since taking a full account of it would require reading the passage in the context of *De insomniis*, staking out a position on how best to interpret *phantasia*, and how *phantasia* potentially explains perceptual appearances (such as the sun looking a foot long)—vexed interpretive questions all.

In his concluding remarks Ganson sums up the second problem by claiming that Aristotle assimilates perception to thought. Beginning there will allow me to frame how I am thinking of these issues. This is important since my remarks about the role

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of perception in explaining unforced animal movement are relatively minor but gain in significance when placed into context.

I am among the readers of *De anima* who read it as being in dialogue with, among other things, the *Theaetetus*. One of the important things being negotiated is the distinction between perception and cognition. We moderns are relatively comfortable with that distinction—even if a substantive characterization of it, about which there is widespread non-collusive agreement, remains elusive. Indeed, even if some among us are skeptical about the very distinction—at least we have some idea of what they are skeptical about. Matters were, of course, different in the ancient world, where there was considerable unclarity about the distinction, if it was even drawn. Thus Aristotle complains of some of his predecessors that they assimilated thought to perception. Plato draws a distinction between perception and cognition in the *Theaetetus*. It is natural that he does, given that part of the task of that dialogue is to argue against an imaginatively elaborated Protagorean assimilation of knowledge to perception. Elements of Plato's discussion can be found throughout *De anima*. However, while Aristotle accepts with Plato that a distinction should be marked between perception and cognition, that distinction is nevertheless transformed in his hands.

In the *Theaetetus* (184e8–185a3), a sensory capacity is the capacity to, in Peripatetic vocabulary, present the proper sensibles of the given modality. So sight is the capacity to present color, audition the capacity to present sound, olfaction the capacity to present odor, and so on. Plato links objects being perceptible to one sense alone to a conception of the senses as powers or capacities. There are a couple of separable ideas here that get elaborated and differently developed in *De anima*: that powers or capacities are individuated by their proper exercise and that the proper exercise of sensory capacities is the presentation of their proper objects in sensory awareness. These two claims in conjunction with the claims about the proper objects of vision, audition, and olfaction imply that sight just is the capacity to see color, audition the capacity to hear sound, and olfaction the capacity to smell odor.

Aristotle broadens the range of things which are perceptible. Proper sensibles may be perceptible in themselves—in possessing a color, say, an object contains within itself the power of its visibility—but they are not the only things that are perceptible in themselves. So too are the common sensibles, objects not only perceptible in themselves but to more than one sensory modality. Significantly, Aristotle maintains that the difference between color and sound is perceptible. Whereas Plato insisted that difference is an intelligible feature discovered by reason, Aristotle insists that the difference between the proper sensibles at least is perceptible.

Confining our attention to the proper sensibles, Aristotle holds with Plato that they are perceptible in themselves and perceptible to one sensory modality alone. This is why they can individuate the sensory modalities. But Aristotle in his definition of the proper sensibles attributes to them a further feature—that no error is possible about the presence of the proper sensibles. One striking thing about this feature is its negative characterization, since there are two ways to understand it. No error may be possible either in the sense that:

- (1) Perceptions of proper sensibles are always true or correct;
- (2) Perceptions of proper sensibles are not the kind of thing that can be true or false, correct or incorrect.

If the perception of proper sensibles were always true or correct, then no error would be possible, at least about their presence. If, however, the perception of proper sensibles were not the kind of thing that so much as could be true or false, correct or incorrect, no error would be possible, but in a different sense. The sensing of proper sensibles would be impervious to error not because of some guarantee that the proper sensibles of a given sense falls within its ken but because the sensing of proper sensibles fails to be evaluable as correct or incorrect.

While Aristotle's usual formulation in Book 2 of *De anima* is that no error is possible about the presence of primary objects, he does sometimes say, especially in Book 3, that the perception of primary objects is always true. This provides *prima facie* support for the first interpretation. On this interpretation, sense perception has something like an intentional or representational content. It is at least evaluable as true or false, correct or incorrect. This is what Ganson described as the content view. Against this suggestion, an advocate of the second interpretation might claim that, by itself, this leaves unexplained what needs explaining—Aristotle's apparent preference for the negative characterization in Book 2. Aristotle's preference for the negative characterization is well explained by the second interpretation. On that interpretation, the denial of the possibility of error is not consistent with perceptions being always true, and so the condition could only be expressed by the negative characterization. So while the first interpretation must explain Aristotle's preference for the negative characterization in Book 2, as well as provide some guarantee for why the proper sensibles are always correctly represented in sensory experience, the second interpretation faces the potential embarrassment of explaining away the claim that the perception of proper sensibles is always true as merely loose talk if not indeed a slip on Aristotle's part.

We can decide between these rival interpretations by considering Aristotle's account of error (*de An.* 3.3, 428b17–26; 3.6, 430a27–b5). Here too it is plausible that Aristotle has the *Theaetetus* in mind, especially the puzzles about the possibility of error that animate the wax and bird cage analogies. According to Aristotle, error requires a certain kind of complexity, a complexity that the sensory presentation of the proper sensibles lacks. Specifically, only with combination is error possible:

[...] where the alternative of true or false applies, there we always find a sort of combining of objects of thought in a quasi-unity. As Empedocles said that "where heads of many a creature sprouted without necks" they afterwards by Love's power were combined, so here too objects of thought which were separate are combined [...]. (*De An.* 3.6, 430a27–32, trans. Smith, in Barnes 1984: 54.)

For falsehood always involves a combining; for even if you assert that what is white is not white you have combined not-white. (*De An.* 3.6, 430b1–3, trans. Smith, in Barnes 1984: 54. See also *Cat.* 2, 1b1–6; *Int.* 1, 16b9–18; 5, 17a17–20; and Plato, *Sophist* 262.)

The simple presentation of the white of the sun, when not combined with other sensible elements of the scene, is not in error. But not because of any guarantee that color perception is always true. Rather, it is only when sensible objects are combined that the senses may mislead. We cannot be mistaken about the presence of the sun's whiteness upon seeing it, but we can be mistaken about the location of the whiteness, when we combine whiteness, a primary object, with other sensibles, such as location, in this case, a common sensible. Since the sensory presentation of proper sensibles does not involve combination, and combination is necessary for error, then no error is possible about the presence of these sensory objects in the strong sense that their perception is not the kind of thing that so much as could be evaluable as true or false, correct or incorrect. We simply confront what is presented to us in sensory consciousness.

This is the basis for the second contrast that Aristotle draws between perception and understanding in the following passage from Book 3 of *De anima*:

That perceiving and understanding are not identical is therefore obvious; for the former is universal in the animal world, the latter is found in only a small division of it. Further, thinking is also distinct from perceiving—I mean that in which we find rightness and wrongness—rightness in understanding, knowledge, true opinion, wrongness in their opposites; for perception of the special objects of sense is always free from error, and is found in all animals, while it is possible to think falsely as well as truly, and thought is found only where there is discourse of reason. (*De An.* 3.3 427b7–15, trans. Smith, in Barnes 1984: 49.)

All animals perceive, but not all animals are rational. Rational activity, such as thinking, is evaluable as correct or incorrect. But perceptions of proper sensibles, being simple presentations of these sensory objects, are insusceptible to error in this way. The line of reasoning behind this way of contrasting perception and understanding can be found in the *Theaetetus*, on at least some interpretations. So it is possible that the second condition on being a primary object itself derives from Aristotle's reading of the *Theaetetus* as well.

The second interpretation, according to which error is not possible about the presentation of the proper sensibles since sensory presentation is not the kind of thing that is true or false, correct or incorrect, still faces the potential embarrassment that Aristotle in Book 3 describes perception as being always true. Allow me to make two brief remarks. First, attention to context helps. In the context in which perception, of the proper sensibles at least, is described as always true, the emphasis is on the contrast with judgment, which is not always true, thus leading to Aristotle's quietly taking up the puzzle from the *Theaetetus* in providing his own account of the possibility of error. The whole thrust of the passage is to impute to judgment the possibility of error in a way that contrasts with perception. Second, perhaps describing perception, of at least the proper sensibles, as always true, without subscribing to the content view is awkward and potentially misleading. But if we bear in mind the intellectual context, where the very distinction between perception and cognition was being forged, it is not surprising that descriptions of perception are not as regimented as they would be in an intellectual context where the distinction between perception and cognition has become, as it were, part of normal science.

Consider, now, Ganson's discussion of primitive agency. According to Ganson, perception allows an animal to have in mind, as the target of primitive agency, something which is not, in fact, present. Moreover, this kind of puzzle about presence in absence can motivate an ascription of intentional or representational content. Honeybees, according to Aristotle, lack reason and imagination. That means that the cognitive component of their agency is limited to perception. Bees pursue distant flowers, the source of food, by their fragrant smell. So if we can find a kind of presence in absence in the olfactory perception of bees, that is some reason for thinking that perception has an intentional or representational content.

Aristotle uses this kind of puzzle or *aporia* about presence in absence to argue for the intentional character of memory (*Mem.* 1, 450a25–451a1; for discussion, see Sorabji 2004). Aristotle's response to the puzzle is to straightforwardly accept the claim of absence and reinterpret what purported to be a presentation instead as a kind of re-presentation. When one remembers Corsicus in his absence one contemplates a *phantasma* caused by a previous perception of Corsicus and one conceives of the *phantasma* as a likeness and reminder of Corsicus as he was perceived. Ganson's own response to the present puzzle about presence in absence follows this Peripatetic model.

According to Ganson, the puzzle arises in the following manner. How does the bee move towards the distant flower by smell? Just as we hear sounds and their sources, Ganson maintains that bees smell, not only odors, but the odorous. The bee smells, not only the odor, but the distant source of the odor, the fragrant flower. But the pleasant odor, by itself, won't prompt movement. It is already present. What prompts movement is the flower smelled. Insofar as Ganson maintains that the target of primitive agency must be cognized by perception, imagination or reason, then since the target of the bees' agency is the flower, and since bees lack imagination and reason, the flower itself must be the object of perception. But the odorous flower is not present in the way that its odor is, and yet it is smelled. This kind of presence in absence is meant to provide at least some reason to think that the odorous is part of the intentional or representational content of the bee's perceptual experience.

I have four worries about Ganson's argument in ascending order of seriousness.

First, I can find no textual evidence that directly supports Ganson's contention that bees perceive not only odors but the odorous. By the same token I can find no textual evidence that directly contradicts it either.

Second, given the role that the perception of the odorous plays in primitive agency, a worry may arise, however. The odorous is more important practically than any odors they may produce, at least potentially. Perceptually discriminating a distal flower, a source of food, in the bee's olfactory experience, is more important, from a practical point of view, than enjoying its pleasant odor. Perceiving a source of food provides a selective advantage in the way that being subject to a pleasant sensation need not. If that is right, then there is some pressure to think that olfaction is for the sake of smelling the odorous. But the odorous is a common sensible and perceptual capacities are, for Aristotle, for the sake of perceiving their proper objects (*Metaph.* Θ.8, 1050a10). Postulating the odorous along with odors as the objects of olfaction threatens the explanatory framework of *De anima* of explaining perceptual

capacities in terms of perceptual activities and perceptual activities in terms of their proper objects, whose perception is that for the sake of which the animal has that capacity. Though, perhaps this is Aristotle's problem and not Ganson's.

Third, the perception of the odorous is not necessary to explain how an animal, lacking imagination and reason, can follow a scent trail. All that is needed is a perceived difference in intensity of the odor, or perhaps its pleasantness, as the animal approaches the odorous. The pleasurable fragrance being more intense in a certain direction can prompt an animal to move in that direction without any representation whatsoever of the odorous. This third worry combines with the first. If there is no direct textual evidence for bees' perception of the odorous, and it is not indispensable to the explanation of an animal's ability to follow a scent trail, then why make the attribution? It can seem groundless. And given the second problem, it can seem, not only groundless, but of doubtful coherence the way it threatens the explanatory framework of *De anima*.

Fourth, there is a very specific sense in which the odorous is absent when the bee smells its odor at a distance from it. The odorous, in the present instance, the flower, is absent in the specific sense of not being spatially present. But does that really conflict with the sense in which the odorous would be present in perceptual experience, assuming that the odorous is in fact perceived? Ganson's claim that it does strikes me as turning on the same conflation that Arnauld attributes to Malebranche. If that is right, then there is no genuine conflict and no puzzle to motivate the attribution of intentional content. In *Recherche de la Vérité* 3.2.1.1, Malebranche argues that if the sun and the stars were the immediate objects of perception, the soul would have to leave the body to wander about the heavens. Only in this way could the distant heavenly bodies be intimately joined with the soul. In *Des Vrayes et des Fausses Idées*, Arnauld charges that Malebranche's reasoning, here, turns on a conflation. To be sure, when we perceive an object, it is present in our perceptual experience. But the thought that the soul would have to wander the heavens to perceive the sun and the stars follows only on a different and specifically spatial understanding of presentation. But perceptual presentation is not spatial presentation. Arnauld emphasizes this denial by echoing Aristotle (*de An.* 2.7, 419a13–14): "The object must be absent from the eye, since it must be some distance from it, for what is in the eye or too close to it cannot be seen" (Arnauld, *Des Vrayes et des Fausses Idées*, Chapter 4; Gaukroger 1990, 62). Arnauld's response to Malebranche is compelling and echoes what I described in my book as Aristotle's rejection of the Empedoclean principle (Kalderon 2015, 17–39).

Ganson is keen to emphasize, and rightly so, that Aristotle is careful not to over-intellectualize the cause of animal movement. Nevertheless, Ganson thinks that perception needs a content similar to the content of thought in order for perception to play the required role in explaining unforced animal movement. I concede that that is an attractive thought if one is inclined to attribute the content view to Aristotle. What I am failing to see, just yet, is why we are forced to concede that perception must have a content in the required sense. On the content view, there is a kind of sensory predication analogous with the predication involved in the corresponding perceptual judgment. Moreover, the pleasant would have a kind of universal status

in that it is predicated of many things (this odor as well as that odor, say) (*Int.* 7, 17a37–38). The pleasant would be said of an object but not be in the object (*Cat.* 2, 1a20–b9). But this seems inconsistent with Aristotle’s insistence that the objects of perception be particular and not universal (*de An.* 2.5, 417b18–26). Moreover, it is not clear why, apart from an attachment to the content view, any of this is needed. Bees may lack thought, but perceiving the pleasantness of an odor may prompt unforced movement on their part given bee appetites, without their experience involving anything like sensory predication. Assertion has force. Perception is like assertion in that a presentational phenomenology has a kind of force too. But perception lacks anything like assertoric force attaching to its content. Perception has a force simply in the lively and vivid manner in which it presents its object. The bees are moved, in an unforced manner, given the nature and content of their appetites, simply by the presentation of the pleasant odor.

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Chapter 5

The Case of Red-Stained Mirrors: Perception, Strange Phenomena, and the Role of Exemplification in Aristotle



Filip Radovic

Abstract This paper examines Aristotle’s discussion of the alleged phenomenon that the eyes of menstruating women stain mirrors red (*De insomniis* 459b23–460a23). Contrary to some earlier interpretations it is shown that the relevant passage is well integrated into the text and that it has no special bearing on Aristotle’s discussion on perception as discussed in *De anima* and *De sensu*. Nonetheless, the passage is at odds with Aristotle’s view on the causes of menstruation as expressed in the zoological treatises which raises questions about how examples in general are used throughout the corpus. It is suggested that Aristotle includes the phenomenon of red-stained mirrors in the discussion because it is a popular belief that sheds light on causal sensitivity and persistent after-effects which in turn explain the nature of dreams—not because the phenomenon itself is judged to be credible.

5.1 Introduction

This paper examines Aristotle’s discussion of an extraordinary phenomenon in *De insomniis* where menstruating women are said to stain mirrors red by “looking” into them. The topic is worth exploring for a variety of reasons. The relevant passage has often been assumed to have some bearing on Aristotle’s view on perception, and some interpreters have claimed that the passage is poorly integrated into the discussion on dreams, so that it is likely an interpolation. Apart from these worries, the passage raises general questions concerning principles of interpretation in Aristotle. For instance, how do the occasional remarks about perception, or virtually anything else, that figure in various arguments relate to other parts of the corpus where these topics are more comprehensively discussed? So, in what sense, if any, does the case

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of red-stained mirrors provide insights into Aristotle's views on perception or on menstruation?

In this paper I shall challenge three kinds of responses to the passage, namely, (i) Raphael Woolf's claim that the discussion of red-stained mirrors in *De insomniis* supports a literalist interpretation of Aristotle's theory of perception, (ii) the reading that the passage entails an extramission theory of perception—a theory that is incompatible with the view of perception that Aristotle presents in *De anima* and *De sensu*, and (iii) the opinion that the passage is poorly integrated into the text. It will be shown that the relevant passage highlights a rather general point about the sense organs: a point related to the nature of dreams. Even so, the very idea that menstruating women are able to stain mirrors may seem quite outlandish compared to the other examples that Aristotle uses in the same treatise, which calls for an explanation. I suggest that Aristotle provides a naturalist explanation of a popular view, not necessarily a view he believes to be true, as illustrating a special case of the phenomenon that is under discussion. Contrary to some previous interpretations, it will be shown that the passage has very little, or any, bearing on matters outside the immediate context where it belongs.

5.2 The Phenomenon of Stained Mirrors – *De insomniis* 459b23–460a23

Consider the following passage in *De insomniis*:

That the sense-organs are rapidly sensitive even to slight differences is shown by what happens with mirrors. Indeed, anyone who would devote attention to it might look into that subject too and raise a difficulty. At the same time, it is clear from this case that the organ of sight is not only affected by, but also acts upon its object. For in extremely clean mirrors, when women look into them during their menstrual period, the mirror surface takes on a sort of blood-red cloud. In fact, if the mirror is a new one, it is not easy to get the stain out, although it is easier with an old one. The reason is, as we have said, that the organ of sight is affected not only by the air, but is also active and imparts movements, just as shining objects do. In fact the organ of sight is just such an object and one that possesses colour. One may reasonably suppose, then, that during menstrual periods the eyes are in the same state as any other part of the body. Furthermore, they are full of blood-vessels by nature. Hence, when menstruation occurs, owing to disorder and turbulence of the blood, the difference in the eyes is invisible to us, and yet it is present (for the nature of semen and of the menses is the same). The air is moved by the eyes, and makes the air extending over the mirror's surface to be of a certain quality, i.e. that by which it is affected itself. And this air in turn affects the surface of the mirror. Now just as with clothes, the cleanest are the quickest stained; for anything clean shows up distinctly whatever it receives, the most clean showing the smallest blemishes. Likewise the bronze, owing to its smoothness, is highly sensitive to any sort of impact (and one should recognise the impact of air as a form of friction, a wiping, as it were, or washing on). And because of its cleanness, any impact whatever shows up on it. The reason why the stain will not readily come off new mirrors is that the surface is clean and smooth. For it permeates such mirrors in depth and all over—in depth because the surface is clean, and all over because it is smooth; whereas in old mirrors

it does not persist, because the stain does not penetrate to the same extent, but is more superficial. (Aristotle, *Insomn.*, 459b23–460a23, trans. Gallop).¹

The passage was excised from Beare's translation (1908) and Hett's original Loeb edition (1936), no doubt in order to save the broader audience from embarrassing content. In fact, some scholars have questioned the passage's authenticity. For instance, Wilhelm Biehl (1898) expressed doubts as to whether Aristotle really believed that menstruating women could stain mirrors and claimed that the passage is poorly integrated into the overall discussion. As he put it: "for it both badly interrupts the course of the argument and contains matters, such as the staining of mirrors with an exhalation of menstruating woman, which are better fitted to a collection of strange phenomena than to serious philosophy."² Other scholars have defended the authenticity of the passage, for instance, Hendrik J. Drossaart Lulofs (1947), David Ross (1955) and Paul Siwek (1963).

The passage has also been assumed to articulate a theory of vision that contradicts Aristotle's view on perception in *De anima* and *De sensu*. For example, Drossaart Lulofs (1947) maintained that the passage includes an extramission theory of perception—a theory that assumes that vision involves something akin to rays that emanate from the eyes which reach perceived objects.³ Lulofs writes:

Biehl has failed to see the main argument which would have been conclusive in his days, viz. that the statement 460a 1 sq. ὅτι οὐ μόνον πάσχει τι ἡ ὄψις ὑπὸ τοῦ ἀέρος, ἀλλὰ καὶ ποιεῖ τι καὶ κινεῖ, contradicts *De sensu* 2.437b 11 sqq., where this particular theory is forcibly refuted. This passage not only proves in a striking way that there was a time when Aristotle did not reject the Empedoclean and Platonic conception of vision and interpreted

¹ ὅτι δὲ ταχὺ τὰ αἰσθητήρια καὶ μικρὰς διαφορὰς αἰσθάνεται, σημεῖον τὸ ἐπὶ τῶν ἐνόπτρων γινόμενον· περὶ οὗ καὶ αὐτοῦ ἐπιστήσας σκέψαιτό τις ἂν καὶ ἀπορήσειεν. ἅμα δ' ἐξ αὐτοῦ δῆλον ὅτι ὥσπερ καὶ ἡ ὄψις πάσχει, οὕτω καὶ ποιεῖ τι. ἐν γὰρ τοῖς ἐνόπτροις τοῖς σφόδρα καθαροῖς, ὅταν τῶν καταμηνίων ταῖς γυναιξὶ γινόμενων ἐμβλέψωσιν εἰς τὸ κάτοπτρον, γίνεται τὸ ἐπιπολῆς τοῦ ἐνόπτρου οἶον νεφέλη αἰματώδης· καὶ μὲν καινὸν ἢ τὸ κάτοπτρον, οὐ ῥάδιον ἐκμάζει τὴν τοιαύτην κηλίδα, ἐὰν δὲ παλαιόν, ῥᾶον. αἴτιον δέ, ὥσπερ εἵπομεν, ὅτι οὐ μόνον πάσχει ἡ ὄψις ὑπὸ τοῦ ἀέρος, ἀλλὰ καὶ ποιεῖ τι καὶ κινεῖ, ὥσπερ καὶ τὰ λαμπρά· καὶ γὰρ ἡ ὄψις τῶν λαμπρῶν καὶ ἐχόντων χρῶμα. τὰ μὲν οὖν ὅμματα εὐλόγως, ὅταν ἢ τὰ καταμήνια, διακεῖται ὥσπερ καὶ ἕτερον μέρος ὁτιοῦν· καὶ γὰρ φύσει τυγχάνουσι φλεβώδεις ὄντες. διὸ γινόμενων τῶν καταμηνίων διὰ ταραχὴν καὶ φλεγμασίαν αἱματικὴν ἡμῖν μὲν ἢ ἐν τοῖς ὅμμασι διαφορὰ ἀδηλος, ἔνεστι δέ (ἢ γὰρ αὕτη φύσις σπέρματος καὶ καταμηνίων), ὁ δ' ἀὴρ κινεῖται ὑπ' αὐτῶν, καὶ τὸν ἐπὶ τῶν κατόπτρων ἀέρα συνεχῇ ὄντα ποῖον τινα ποιεῖ καὶ τοιοῦτον οἶον αὐτὸς πάσχει· ὁ δὲ τοῦ κατόπτρου τὴν ἐπιφάνειαν. ὥσπερ δὲ τῶν ἱματίων, τὰ μάλιστα καθαρά τάχιιστα κηλιδοῦται· τὸ γὰρ καθαρὸν ἀκριβῶς δηλοῖ ὅ τι ἂν δέξηται, καὶ τὸ μάλιστα τὰς ἐλαχίστας κινήσεις. ὁ δὲ χαλκὸς διὰ μὲν τὸ λεῖος εἶναι ὁποιασοῦν ἀφῆς αἰσθάνεται μάλιστα (δεῖ δὲ νοῆσαι οἶον τρίψιν οὔσαν τὴν τοῦ ἀέρος ἀφὴν καὶ ὥσπερ ἔκμαξιν καὶ ἀνάπλυσιν), διὰ δὲ τὸ καθαρὸν ἔνδηλος γίνεται ὀπληκικοῦν οὔσα. τοῦ δὲ μὴ ἀπέναι ταχέως ἐκ τῶν καινῶν κατόπτρων αἴτιον τὸ καθαρὸν εἶναι καὶ λεῖον· διαδίδεται γὰρ διὰ τῶν τοιούτων καὶ εἰς βάθος καὶ πάντη, διὰ μὲν τὸ καθαρὸν εἰς βάθος, διὰ δὲ τὸ λεῖον πάντη. ἐν δὲ τοῖς παλαιοῖς οὐκ ἐμμένει, ὅτι οὐχ ὁμοίως εἰσδύεται ἢ κηλὶς ἀλλ' ἐπιπολαιότερον. (Text ed. W. D. Ross.)

² Biehl quoted in Ross 1955: 272 (trans. Dean-Jones 1994).

³ See, for example, Modrak 1987: 209 n.50 and Caston 2004: 315 n.147 for recent advocates of Drossaart Lulofs' interpretation that Aristotle's expresses an extramission theory of vision together with reasons given by Biehl.

it in his own way to explain a phenomenon that puzzled him, but also that *De ins.* B must have been written long before *De anima* and *De sensu*.⁴

I am not convinced that any of these worries are as warranted as they may appear. Let us return to the text and examine some details in the relevant passage.

First, we may note that the phrase “Indeed, anyone who would devote attention to it might look into that subject too and raise a difficulty” is likely to indicate that Aristotle is cautious about the phenomenon.⁵ As will be shown later, Aristotle may have had good reasons to include the example into the discussion even if he was sceptical about it or disbelieved its existence.

Aristotle maintains that there is an increased amount of blood in the blood-vessels during menstruation but this is not noticeable by visual inspection. These blood-vessels in the eye affect a clean mirror so that a red cloud becomes noticeable all over the surface of the mirror. Thus, the appearance of a red cloud on the mirror seems to involve some kind of magnification of the visibility of the colour that originates from the eyes. Aristotle’s main point, however, seems to be to explain how the colour can be transferred from the eye to the mirror, not how the colour can be *seen* in the mirror. Note also the causal mechanism that stains the surface of the mirror does not seem to be a case of ordinary reflection.⁶ In fact, the passage exhibits no apparent attempt to explain visual perception, as such; it rather aims to illuminate general properties of the sense organs by means of an analogy. Aristotle’s remark that eyes not only are affected by objects, but also impart movements just like shiny objects may perhaps suggest that he is referring to a kind of perceptual mechanism. However, note that shiny objects do not see anything. In addition, Aristotle is quite clear that the eye should be understood as analogous to other parts of the body and of course, body-parts in general do not possess the capacity to see anything. The point simply seems to be that the eye is an object of perception just like any other corporeal object (460a1–3).

Moreover, it is the cleanness of the mirror that makes the red-cloud manifestation visible and stained in the same way a clean garment makes stains more visible and difficult to remove. Mirrors are said to be sensitive to minor impacts because of their smoothness and the impact from the movements in the air, which is likened to a form of wiping or washing. The descriptions in terms of wiping and washing may illuminate the assumption that the redness takes the shape of a cloud over the whole surface of the mirror as if it were a kind of dyeing.

Let us now turn to a relatively recent reading of the passage that supposedly lends support to a literalist interpretation of the Aristotelian theory of perception.

⁴Drossaart Lulofs 1947: xxxii–xxxiii. Drossaart Lulofs suggests a developmentalist view in line with Werner Jaeger (1934) in order to explain the alleged discrepancies concerning theories of vision.

⁵See van der Eijk 1994: 168 for further comments on this point.

⁶Cf. Sprague who observes that: “In our passage it is notable that the mirror receives the colour without receiving the shape (‘the surface of the mirror becomes a sort of bloodshot cloud’ 459b: [trans.] Barnes) just like the mirrors mentioned by Aristotle in *Meteorology* III, 2, 372a30ff., in his discussion of rainbows” (Sprague 1985: 324).

5.3 Red-Stained Mirrors as Evidence of a Literalist View of Perception

Consider Raphael Woolf's claim that the relevant passage supports a literalist interpretation of sense perception, that is, the view that the sense organs become literally red when they perceive something red.

Now so far, the fact that the eye's blood-vessels are literally coloured red is neither here nor there. For the question I am concerned with is not whether, in Aristotle's view, the eye is in some sense literally coloured red at all times and still more so during a woman's menstruation (though this undoubtedly *is* his view); but rather, whether the eye literally takes on the colour of the coloured objects it perceives when it perceives them. That it does do so (at least as far as this passage is concerned) is, I think, shown by the fact that Aristotle clearly intends that what the eye does to the mirror—i.e., causing it to become literally coloured by staining it red—is to be seen as a reciprocal relation of what objects do to the eye. For Aristotle says (in the first passage italicized above) that “just as the organ of sight is affected by, so too it acts upon, its object” (459b27). The “just as...so too...” language strongly suggests that Aristotle considers that the organ of sight can affect its objects *in the same way* as objects affect the organ of sight. The sentence immediately following, beginning “For in extremely clean mirrors....” then explains what Aristotle has in mind, by illustrating how the organ of sight can *literally* colour mirrors, by staining them red. It seems to be, in the light of this, that there is only one way in which Aristotle can be conceiving of what happens when the organ of sight is in turn affected by one of its objects, and that is that it becomes literally coloured too. The eye is stained red when it looks at a red object, as the mirror is stained red when looked at by the menstrual red eye.⁷

First, note that there seems to be no explicit reference to any reciprocal *perceptual* relation. Red objects can be seen by eyes, yet eyes, even if they are coloured red, cannot make mirrors see anything. The term “reciprocal” is misleading in this context since the example illustrates an analogy that concerns causal affection in general—not a reciprocal *causal perceptual* relation in particular. We may also note that there is no further elaboration by Aristotle that suggests that the reciprocity concerns a perceptual relation.

Woolf maintains that the passage supports the so-called literalist interpretation of perception that is opposed to the spiritualist interpretation. Modern literalists, following in the footsteps of Richard Sorabji (1974), take Aristotle to mean that there is a physiological process in which the visual sense organ literally takes on the perceptible quality of the perceived object. Against this view Myles Burnyeat (1992) suggested that there is no physiological change involved in perception, only a spiritual change. The idea roughly is that the sense organ goes through some mental alteration when it is exposed to a certain type of object and in some way represents the perceived object without literally becoming like the perceived object.⁸

On the other hand, it is misleading to claim that the relevant passage does not involve *any* reference to perception. On the contrary, the passage concerns perception in so far as it aims to illuminate certain features of the sense organs that are

⁷Woolf 1999: 388.

⁸See Caston 2004 for a thorough discussion of the two interpretations.

relevant to the account of dreams. Nevertheless, exactly what kind of qualitative change takes place in the eye compared to the mirror is not clear from the description of the alleged phenomenon, but this seems to be a subordinate matter given the explanatory context which highlights persistent causal effects.

5.4 The Theme of Red-Stained Mirrors in Context

In order to see how much Woolf stretches the passage we have to consider the wider and narrower contexts of Aristotle's discussion. The overall point that Aristotle tries to establish is that activity may persist when the causal factor that initiated the activity is gone, and that slowly decaying causal effects in general are more common than one might expect.⁹ Dreams, in the form of persistent sensory activity during sleep, are special cases of the relevant kind of after-effects that Aristotle demonstrates with a range of different examples. The case of red-stained mirrors fits perfectly well into this discussion. In fact, the theme of sensitivity and after-effects comprise the major part of Chap. 2 (*Insomn.* 459b7–23) and involves not only the sense-organs but also various inanimate objects.¹⁰ The example concerning red-stained mirrors can be viewed as one spectacular example among other more mundane ones.

Most of Aristotle's examples are quite illuminating and mainly concern well-known phenomena. For example, when we stare for a while at a single colour and then turn our gaze elsewhere, other things seem to possess that colour. Further, if we look at the sun and then close our eyes, the perception lingers for a while and changes until it eventually fades out. In the same vein, when people perceive moving objects, and then observe objects at rest, the sense of movement persists for a while. Further examples are given: people who hear loud noises or people who smell strong smells temporarily suffer from impaired hearing and ability to smell. Thus, the discussion of red-stained mirrors is not a digression from the main theme, strictly speaking, since this particular example rather highlights the universality of the phenomenon. Aristotle rounds off the discussion by calling attention to wines and oils that take on the smell of things close to them, further examples of sensitivity and the enduring after-effects of various causal influences.

Let us now take a look at the lines that supposedly provide evidence for an extra-mission theory of perception—that is, the description of the mechanism that transfers the colour from the eye to the mirror (*Insomn.* 459a28–b1). In fact, Aristotle is not referring to anything like a visual ray here, or any other perceptual mechanism; rather, he discusses a particular causal mechanism that explains how the colour in

⁹I am quite sympathetic to the readings of the relevant passage by Preus (1968), Sprague (1985) and van der Eijk (2005): see especially van der Eijk 2005: 180 n.24. See also van der Eijk 1994: 169–81. Many of the points that I make have been made earlier by van der Eijk (1994). For instance, regarding the passage 459b23–460a32, see van der Eijk (1994): 183–93.

¹⁰Cf. Drossaart Lulofs 1947: xxxi.

the eyes can be transferred to the mirror. It is important to see that eyes affect mirrors, like any other object, not because eyes have perceptual powers. Again, the explanandum is not how the red stain in the mirror is perceived but how the colouration in the eye is duplicated in the mirror from the nearby eye. Thus, the staining does not occur because the woman is “looking” or “gazing” into the mirror, strictly speaking. On the contrary, merely exposing the eye to the mirror seems sufficient to dye the mirror red, which means that a blind woman would also stain a mirror when her eyes are facing it.

How then is the colouration in the eyes assumed to causally affect mirrors? Aristotle makes use of the causal model he has introduced a few paragraphs earlier (*Insomn.* 459a29–33), that is, a kind of chain-reaction that propagates movements in the air or water, which explains how objects that are separated spatially can affect each other—for example, how wines can take on the flavour of nearby things. It is this causal mechanism that explains how the colour in the eye is transmitted to the mirror and appear like a red cloudy stain. Aristotle refers to this causal mechanism a third time in *De divinatione* 2, 463b31–464a29, where he outlines an explanation of prophetic dreams about events in remote places and claims it to be superior account to Democritus’ explanation involving mobile *eidōla*.¹¹ Also this passage stands out as a supplementary account that does not square with Aristotle’s official view on dreams and perception in the state of sleep.¹²

5.5 Does Aristotle Accept the Idea of Stained Mirrors as Credible?

Why does Aristotle go through the trouble to consider such a strange phenomenon? It certainly appears to be an unnecessary complication to include such a remarkable phenomenon in addition to the other quite ordinary examples that illuminate the same point. Does Aristotle really believe that menstruating women stain mirrors, and if not, why did he include the phenomenon in the text?¹³

One possibility is that even if a modern reader finds the case of red-stained mirrors rather strange, an ancient reader might have recognised the idea as a quite

¹¹ The passage in *De divinatione* on the Democritean theme involves the only case where a person is supposed to receive something akin to perceptual information about external states of affairs in remote places by means of the assumed kind of causal propagation. However, Aristotle is silent about how this information is cognised.

¹² As van der Eijk puts it “[...] Aristotle explicitly says that we receive these stimuli [from remote places] ‘because’ we are asleep—indeed, they ‘cause perception because of sleep’ (αἰσθησιν ποιοῦσιν διὰ τὸν ὕπνον), which seems in blatant contradiction to everything he has said in *On sleep*” (van der Eijk 2005: 202).

¹³ Note that the alleged phenomenon is quite difficult to falsify since if it fails to occur one can always assume that the mirror at hand is not sufficiently smooth or clean. I am in debt to Sara Nazzari for this observation.

popular belief. Aristotle might have used a well-known superstition in order to enforce a particular point in the investigation. Thus, in one interpretation, Aristotle alludes to a well-known belief on menstruation because it clarifies the general causal phenomenon he is currently examining, but this does not necessarily mean that he accepted the alleged phenomenon of red-stained mirrors as credible. Even so, this particular example may have helped the audience grasp a crucial point in the discussion even if it turns out that the belief in the phenomenon is unwarranted.

Furthermore, Aristotle's account of the causes of menstruation in *De insomniis* seems to conflict with his official view on menstruation.¹⁴ As Lesley Dean-Jones notes:

But the author claims that menstruation is caused by 'through a disturbance of the blood and the swelling [it causes in the body]' (διὰ ταραχὴν καὶ φλεγμασίαν αἱματικήν), which does not accord with Aristotle's theory of menstruation. He believes that menstrual blood is different from all other blood in the body, that it collects naturally and steadily over the month, and is evacuated when the womb is full. It is not a disturbance of the blood elsewhere in the body, nor does it cause anything other than the womb to swell.¹⁵

Dean-Jones goes on to suggest that the incompatibility between the different accounts of menstruation suggests that the passage is a later interpolation. David Gallop expresses similar worries:

The supposed mirror phenomenon is included by the elder Pliny among many ancient superstitions associated with menstruation (*Natural History*, VII, 64–66). It is hard to believe that Aristotle gave any credence to such old wives' tales. Nothing of the sort is ever suggested in the scientific accounts of menstruation given in his zoological treatises (*GA* I. 19, *HA* VII. 2).¹⁶

In a similar vein, Philip van der Eijk remarks:

Briefly summarised my view is (1) that what seems to be underlying the passage is a traditional belief (perhaps derived from magic or midwives' tales) in the dangerous and polluting effect of menstrual blood, and that Aristotle must have accepted this story without checking it because he felt able to provide an explanation for it; such beliefs were not uncommon regarding menstruation (although most of the evidence dates from the Roman period) [...].¹⁷

However, there are different ways to deal with perceived incompatibilities in this case. Here is one suggestion. For what it is worth, we know that Aristotle takes popular opinions seriously and that he is prepared to use examples in a way that is difficult to reconcile with his official treatment of the same phenomena elsewhere. Perhaps the only job the example is supposed to do is to remind the reader of a well-known alleged phenomenon in order to stress a fundamental point that underlies the

¹⁴The assumption that the theory of menstruation is at odds with what Aristotle argues in *GA* depends on the interpretation of 460a6–9. See van der Eijk 1994: 174 for a discussion of the various possible readings, including a way of reading which avoids this difficulty.

¹⁵Dean-Jones 1994: 229–30.

¹⁶Gallop 1996: 145.

¹⁷Van der Eijk 2005: 180.

discussion. As we shall see below, there is a body of evidence that suggests that Aristotle's use of examples is quite fluid.

5.6 Aristotle's Pedagogical Use of Examples

The theme of red-stained mirrors in *De insomniis* raises further questions about Aristotle's general use of examples in the corpus. To put it bluntly, do Aristotle's examples in various arguments reflect his true beliefs or should they rather be taken as illustrative examples?

Scattered examples and things said in passing may superficially seem to support views on a wide range of topics. For example, when Aristotle discusses signs in sleep, as a special case of prevision (*prooran*), he refers to a kind of perceptual state that occurs in sleep as the only example (*Div.Somn.* 463a10–20). Can we learn anything substantial about Aristotle's views on perception or cognition in sleep by analysing this passage? Consider another example from *De insomniis*: Aristotle asserts that people have called up mnemonic images while they were sleeping (*Insomn.* 458b20–25). The very reason Aristotle mentions mnemonic images in this context is to contrast a broader class of *phantasmata* with proper dreams. Should this claim be viewed as a contribution to Aristotle's views on mnemonic techniques? Now, should Aristotle's point about red-stained mirrors be viewed as a complement to the zoological treatises that discuss the case of menstruation more systematically? Alternatively, is it an early attempt to explain the causes of menstruation, or Aristotle's final word on menstruation? How should isolated pieces of information about, for example, perception or menstruation be assessed when they are mentioned outside the official discussion of these topics?

I am not saying that it is impossible for us to gain insights about how Aristotle uses key terms, phrasings, or examples in particular contexts, or for different passages in the corpus to illuminate each other. Even so, it is methodologically risky to use isolated segments or point-specific examples to corroborate a view outside the immediate context where it belongs. For whatever reason, Aristotle appears to be quite unconcerned about the wider theoretical implications his discussions have in other parts of the corpus. This theme will be further elaborated in the subsequent section.

In fact, the precaution not to read Aristotle's examples literally was applied by medieval Aristotelians. For example, thirteenth century scholastics advised their students not to take Aristotle's examples too seriously with reference to *Priora analytica* 1.41 where Aristotle says that the examples of deductions may be formulated in a way that interests the student, but do not necessarily have to occur in that form. The idea was phrased as *Exempla ponimus non quod ita sint, sed ut sentiant addiscentes quae addiscunt* ("We do not give examples because they are factually true but

in order that learners may grasp what they are learning”)¹⁸ and further, *De exemplo non requiritur verificatio, sed manifestatio* (“What is required of an example is not verification but manifestation”),¹⁹ which have their source in Averroes’ commentary to *De anima* 2.²⁰ Now if we suppose that the case of red-stained mirrors is introduced into the discussion because of its instructive merits, its accuracy as an example should be judged according to how well it improves the understanding of the argument—not with reference to how credible the phenomenon is.

5.7 Expository Principles and the Problem of General Cohesion

It is well known that the corpus entails many discontinuities of various kinds. There are not only divergences between different works, but also the same treatise may include striking anomalies. For example, in the extant fragments of what are believed to be lost dialogues Aristotle appears to endorse a Platonic form of dualism between mind and body—a view which is rejected in *De anima*. Other works in the body of scientific treatises also exhibit apparent tensions. For example, Aristotle sometimes presents views that are at odds with things that are claimed elsewhere, such as the extramission theory of perception endorsed in the *Meteorologica* and *De caelo* but rejected in *De anima* and *De sensu*.²¹ Moreover, Aristotle attributes divinatory powers to the melancholics in the *Eudemian Ethics* in an uncritical way, whereas in *De divinatione* he argues that there is no such thing as divination, strictly speaking. Further, he sometimes modifies and qualifies claims that he has made in the same treatise in an apparently ad hoc manner. Aristotle’s account of prophetic dreams that occur in remote places is an illustrative example of the latter move (cf. above).

Recently it has been suggested that Aristotle employs various principles of exposition as opposed to those of explanation (concerning central doctrines such as the four causes and so on) which might shed light on many of the noted discrepancies in the corpus. William Wians and Ron Polansky clarify the significance of the expository perspective:

Expository principles carry direct implications for the way in which both individual arguments and whole treatises should be read. Rather than displaying a tentative working out of

¹⁸ Hamesse 1974, no. 34.16, 309, trans. Ebbesen.

¹⁹ Hamesse 1974, no. 6.124, 184, trans. Ebbesen.

²⁰ Averroes, *Long Commentary on the De Anima of Aristotle*, 2.67 (Averroes 2009: 183). Arabic commentators were quite comfortable replacing Aristotle’s examples with more up-to-date substitutions. Al-Fārābī, for instance, held that Aristotle’s examples, though “familiar to and current among people of his day,” could easily be replaced with more scientifically sound cases: Harvey 1997: 97.

²¹ For a discussion of a particular application of the extramission theory as an explanation of autoscopy in *Meteorologica* 3.4, 373b1–9, see Radovic and Bennett (forthcoming).

issues, compiled by Aristotle or later editors with little if any regard for a larger unity, Aristotle's works should be read (at least in most cases) as being designed by Aristotle to present material in what he took to be the most epistemologically compelling and pedagogically useful order, including at each stage of the exposition the considered choice of the form of argument to employ and cognizance of the degree to which an initial problem was resolved.²²

Many commentators have noticed that Aristotle is prepared to sacrifice broad cohesion for the use of striking examples and convincing explanations. One should not handle only such apparent discrepancies with care, however: superficial correspondences are equally problematic. The context-dependent character of Aristotle's discussions suggests that the absence of contradictory information does not automatically imply that a passage harmonises with another passage even if they are remarks on the same topic.

5.8 Conclusion

Contrary to what some commentators have argued, it is shown that the theme of red-stained mirrors is well integrated into the discussion in *De insomniis*. The alleged staining of mirrors includes a spectacular case among other ordinary phenomena that illustrate the general nature of causal sensitivity and after-effects that persist over time. However, the stated causes of menstruation in *De insomniis* do not harmonise with Aristotle's official theory of menstruation. Further, the odd nature of the phenomenon makes it look a bit out of place compared to Aristotle's other examples. One way to resolve the perceived tensions is to assume that the purpose of discussing the theme of red-stained mirrors is neither to provide an accurate description of menstruation nor to stress the credibility of the idea as such, but rather to reinforce the general point about the sensibility and persistent activity that explain the nature of dreaming, i.e., the topic of the treatise. Now, if the case of red-stained mirrors reflects a popular ancient belief, it does not seem too far-fetched to suppose that Aristotle made use of this belief to flavour his account in a way that helps the reader grasp the spirit of the argument.

Nevertheless, it is misleading to claim that the alleged phenomenon does not relate to perception in any sense whatsoever. The passage concerns sensory perception insofar as it aims to illuminate certain properties of the sense organs. But the mechanism that supposedly explains the staining of mirrors does not include any reference to perception—neither an extramission theory of perception, nor an explicit assertion that the sense organ literally becomes like the perceived object. In fact, there seems to be no obvious reason for Aristotle to maintain that the eye literally becomes red given the point that he is stressing.

One important result of this study is that one should be quite wary of Aristotle's highly stylised examples, ad hoc explanations, or things said in passing on matters

²² Wians and Polansky 2017: 1.

that primarily belong to some other discussion. I have tried to show that the passage on red-stained mirrors in *De insomniis* exemplifies this point.²³

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Chapter 6

Alexander of Aphrodisias on Simultaneous Perception



Attila Hangai

Abstract Alexander of Aphrodisias picks up Aristotle's insufficient treatment of simultaneous perception and develops an adequate solution for the problem, thereby offering an account of the unity of perceptual consciousness—the single mental activity of a single subject with complex content. I show the adequacy of the solution by using as criteria the requirements that have been identified by Aristotle and approved (and explained) by Alexander. I analyze Alexander's solution in two turns. First, with respect to heterogeneous perceptibles, Alexander adopts and reformulates Aristotle's metaphorical account invoking the analogy with a point. Second, with respect to homogeneous opposites, accordingly, perception is judgement, but it involves physical changes in diverse parts of the primary sense-organ. By this account Alexander resolves the issue of the unity of the subject on the level of the capacity of the soul, and coordinates the complexity of content with the complexity on the physical level. In addition to being adequate, the solution is faithful to Aristotle. I suggest that the interpretative decisions Alexander makes (the clarification of the analogy; the reference he finds to the analogy; the two components of the solution, judgement and parts of the organ) form an ingenious extension of Aristotle's treatment. Interestingly, even though many elements in Alexander's interpretation are taken up by modern commentators, no one has followed it in its entirety, nor even treated it in its own right.

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6.1 Introduction

There is a growing interest in the notion of simultaneous perception in Aristotle.¹ The problem is how it is possible to perceive two (or more) perceptible objects at one time. The problem applies to perceiving white and sweet together as well as white and black—thus perceiving multiple objects from one sense-modality as well as from several. The importance of the issue is clear in Plato's depiction of it in his *Theaetetus* (at 184–186):² without a solution to it one might believe that a person's perceptual awareness is a disjointed array, as if it were that of multiple subjects in the Trojan horse. Plato endorses the argument with its conclusion that on the level of perception there is no unitary conscious experience. Apparently this is what made Aristotle discuss the issue.

Even though Aristotle did have many things to say about the problem and had something to offer as a solution, what we find in his works is not satisfactory. He returns to the problem at least three times: in *De anima* 3.2 and 3.7, and most extensively in *De sensu* 7. He explicates the problem quite clearly, and determines the features a satisfactory solution would require. But his explicit explanations are rather metaphorical; he does not seem to aim at a straightforward, thorough account of the issue, despite its central importance in the explanation of perceptual awareness.

Due to the nature of Aristotle's discussion there is controversy as to which analogy he prefers (if those he describes are not equivalent); what his account consists in; and even what sort of phenomenon of simultaneous perception is under consideration. Aristotle does not explicitly answer these questions, but only offers remarks and philosophical considerations which might help in settling the issue: hence there is room for disagreement. Since my aim here is not to provide an understanding of Aristotle, I shall not judge between the competing interpretations. Instead, my goal is to show that the solution Alexander of Aphrodisias offers for the problem on the basis of Aristotle's treatises is both an adequate solution (judged by the requirements set out by Alexander and for the most part already by Aristotle) and a reasonable extension of Aristotle's account. I shall demonstrate this by examining how Alexander reads Aristotle and how the solution he offers is an interpretation of Aristotle's analogy with the point.

This leads to the clarification of a few issues with regard to Alexander's theory of perception (though these are to be investigated further in a separate study). What does it mean that perception (as activity) is judgement? How is material change involved in perception, what kind of change is it, and how is it related to the judgemental activity of perceiving? How may complex mental (especially perceptual) content be explained? And most straightforwardly: how is the unity of (perceptual) awareness to be accounted for?

¹The most important contributions to interpreting Aristotle's notion are Marmodoro 2014, esp. Chap. 4–7; Gregoric 2007, esp. 129–62; Osborne 1998; Charlton 1981; Modrak 1981a; and Hicks 1907.

²On this problem in Plato's *Theaetetus* see e.g. Cooper 1970; Modrak 1981b; Burnyeat 1990.

Again, Alexander's account may be taken as an interpretation of Aristotle. In this regard it is instructive to see how Alexander answers the interpretative questions above. It is clear that he prefers the Point Analogy to the Apple Analogy (see §6.4 below); and it is explicit how he understands these. The phenomenon to be explained remains implicit, however, as Alexander simply uses the same terms as Aristotle. I suggest that what Alexander and Aristotle have in mind (as simultaneous perception) is basically the unity of (perceptual) awareness—that is, having a single cognition of the (immediate) environment, in contrast to having several distinct cognitions that require further cognitive acts to relate them to each other. This account in turn enters into the explanation of several higher functions of perception: having complex perceptual content in general; having the ability to distinguish perceptible objects from one another; and perceiving physical objects as single unitary things.³ It could be shown that even though many of Alexander's ideas are often reiterated by commentators, his interpretation in its entirety is quite unique.

In what follows, I first (§6.2) set out the problem as it is presented by Alexander (and Aristotle), identifying the requirements for any adequate solution. I shall introduce (§6.3) one particular issue, the Problem of the Opposites: the problem of being moved in opposite ways while being affected by opposite perceptible objects when perceiving them together. Before this issue may be resolved, however, (§6.4) the solution for simultaneous perception of objects in multiple sense-modalities (*heterogeneous* objects) has to be discussed. For the two problems are better resolved in the same way. I explicate (§6.4.1) a General Account; (§6.4.2) the Apple Analogy; and most importantly (§6.4.3) the Point Analogy. Then, I turn (§6.5) to Alexander's solution for the Problem of Opposites. This problem is particularly important, for Aristotle apparently did not provide a satisfactory answer to it. Instead, what he has to offer is at best a metaphorical account of the possibility of a solution, or even the impossibility of it.⁴ Alexander's account involves two elements: (§6.5.1) explicating that perception is indeed judgement; and (§6.5.2) showing how the material change involved in perception is related to perceptual judgement. Once this is discussed, I shall (§6.5.3) briefly show how the account applies to the Point Analogy and (§6.5.4) to the Apple Analogy. I (§6.6) conclude by assessing the adequacy of the solution

³Modrak (1981a: 421) argues that perceiving common perceptibles also depends on simultaneous perception. But common objects simply accompany special ones (Alexander, *de An.*, 65.11–22), so that in their case the problem of simultaneous perception does not arise: see Gregoric 2007: 129–30. Again, Marmodoro (2014) argues that it is simultaneous perception, together with other functions, that depend upon the more general *becoming aware of complex perceptual content*. However, she often seems to equate these functions. Johansen (2012: 180–85) argues that complex perceptual content (including simultaneous perception) is gained by accidental perception. But this cannot account for simultaneous perception of opposites—for they are by no means accidentally perceived.

⁴Hicks (1907: 452) claimed that it turns out that a solution is not possible after all. Gregoric (2007: 141–44, 153–55) argues that the Point Analogy shows only the possibility of a solution, without providing one clearly; cf. Kahn 1966: 57; Hamlyn 1968a: 128; Shields 2016: 274.

against the requirements set out by Alexander himself, and indicating how Alexander's account is an ingenious extension of Aristotle's brief remarks.

Alexander discusses the topic of simultaneous perception directly and most elaborately in his commentary *On De sensu*, following the topic and reasoning of Aristotle's corresponding work *De sensu* 7. In the other passages, in his *De anima* and *Questiones* 3.9, Alexander follows Aristotle's discussion in *De anima* 3.2, where Aristotle focuses rather on judging that two perceptible objects are different—viz. perceptual discrimination—and considers simultaneous perception because discrimination is dependent upon simultaneously perceiving the items that are discriminated.⁵ Thus, I set out the problem and Alexander's solution mainly as it appears in the commentary. But, since the preferred solution Alexander offers is the same in all three places, I will use all of them to fully reconstruct the solution. Since much of what Alexander says depends on Aristotle's text, I note the parallel passages in Aristotle, especially to provide some notes on Alexander's relation to Aristotle.

6.2 The Problem of Simultaneous Perception

In the first half of his treatment in the commentary, Alexander investigates the reasons to deny the possibility of simultaneous perception (Alexander, *in Sens.*, 136.7–156.23). He takes these considerations to be stating and assessing the *endoxa*: posing difficulties to be resolved.⁶ He presents three arguments—by setting out the main principles on which they rest—as he identifies them in Aristotle's chapter.⁷ The first and the second arguments introduce requirements for any solution for the problem, so we shall run through them in turn (§§6.2.1 and 6.2.2). The third argument poses a difficulty for a certain case of simultaneous perception: for *opposites* in one sense-modality. Since Alexander's innovations lie especially in providing a coherent solution for this problem—which Aristotle did not explain satisfactorily—this will be introduced separately (§6.3). But before that we shall see one attempt for an account that provides further requirements for the solution (§6.2.3).

The requirements for any solution for the problem of simultaneous perception that emerge from these arguments are as follows. If two things are perceptible simultaneously they must be perceptible (i) distinctly, *in the same way*, and (ii) *as two*, not as one. Again, (iii) the *activity* of simultaneous perception has to be one, and (iv) this activity has to be in *one time*. One activity will require (v) *one capacity*, indeed one that is able to perceive all kinds of perceptibles. For (vi) the account should be the same for heterogeneous and for homogeneous perceptibles.

⁵ Cf. Alexander, *in Sens.*, 163.6–17.

⁶ Alexander, *in Sens.*, 136.5–6, 156.23–157.2.

⁷ The latter arguments are introduced by “moreover” (ἔτι). A different identification of the arguments is given by Gregoric 2007: 133–35.

6.2.1 Argument from Mixed Perceptibles

The first argument (Alexander, *in Sens.*, 136.7–139.8; cf. Aristotle, *Sens.* 7, 447a14–b6) is briefly as follows:

- (1) The greater movement always displaces the lesser.⁸
- (2) What is unmixed and on its own can be perceived to a greater degree than what is mixed.⁹

Now, there are four possible combinations. The two perceptible objects might be:

- (a) from *one genus* (belonging to the domain of a single sense modality) and of the *same intensity*;¹⁰
- (b) from one genus and of different intensities;
- (c) from *different genera* (in different sense modalities) and of the *same intensity*;
- (d) from different genera and of different intensities.

It is possible in none of these cases that two objects are perceived simultaneously. If the two objects are from one genus—(a) or (b)—then they are mixed, so that they *efface* (ἀφανίζει) each other, hence do not come to awareness. Out of the two objects *one thing*—their mixture—comes to be intermediate between them.¹¹ And in general, the objects mixed are perceptible to a lesser degree than if they were unmixed,¹² as (2) states. In case (d), the lesser movement is displaced by the more intense one so that it is effaced,¹³ as (1) states. Moreover, there is an impure awareness¹⁴ even of the greater movement: thus it is perceived to a lesser degree than in unmixed state,¹⁵

⁸Alexander, *in Sens.*, 136.7–8. Alexander takes up Aristotle’s description in Aristotle, *Sens.* 7, 447a14–15: ἀεὶ ἡ μείζων κίνησις τὴν ἐλάττω ἐκκρύβει. The term “displace” (ἐκκρύβει) occurs also at Aristotle, *Insomn.* 3, 460b32–461a3, where it is claimed that small perceptual motions are displaced by larger ones from perceiving when the person is awake, so that these motions are “effaced” (ἀφανίζονται) and remain unperceived or unnoticed, i.e. do not come to awareness.

⁹Alexander, *in Sens.*, 136.13–14; cf. Aristotle, *Sens.* 7, 447a17–18.

¹⁰In most cases Alexander refers merely to greater (μείζων) and lesser (ἐλάττω) movements, but occasionally (Alexander, *in Sens.*, 137.16) he identifies them as *stronger*—σφοδρότερας.

¹¹Alexander, *in Sens.*, 136.22–137.2. Alexander returns to the mixture of perceptibles at *in Sens.*, 138.8–24. The idea is that out of two perceptible objects in the domain of one sense (e.g. two colours) one single object comes to be when they are put together—in perceiving them (e.g. red and white are mixed and pink comes about). Alexander’s view of intermediate, mixed, colours dependent on mixture of the coloured bodies is expressed at Alexander, *in Sens.*, 63.13–66.6.

¹²Alexander, *in Sens.*, 137.12–14.

¹³Alexander, *in Sens.*, 137.16–17.

¹⁴I shall use “awareness” as a translation of ἀντίληψις and related terms, as Caston (2012) advocates (see 139, n. 346 on the term). In general, I use Caston’s terminology set out in his Index (Caston 2012: 189–214) when not stated otherwise.

¹⁵Alexander, *in Sens.*, 137.17–24.

because of (2). Finally, in case (c) there will be perception of neither object: they efface each other, and being equal this amounts to annulling each other.¹⁶

What the argument shows is that (i) if two things are perceptible simultaneously they must be perceptible *distinctly*, both of them must be revealed *in the same way*. In the cases above, the two objects may appear together (in mixture) at best as revealed in a quite low degree, due to their interference.

6.2.2 *Argument from the Numerical Correspondence of Activity and Object*

Let us turn to the second argument (Alexander, *in Sens.*, 139.9–143.8; cf. Aristotle, *Sens.* 7, 447b6–448a1).

(3) It is more plausible that two things are perceptible simultaneously if the two objects are from one genus—*homogeneous* (e.g. two sounds)—than if from different genera—*heterogeneous* (e.g. colour and sound).¹⁷

(4) It is impossible to perceive simultaneously two homogeneous objects.

Hence,

(5) It is impossible to perceive simultaneously two heterogeneous objects.

Since two objects are either homogeneous or heterogeneous: no two objects are perceptible simultaneously.

According to Alexander (4) is shown by the following argument:

(6) One activity of perception is of numerically one perceptible object.¹⁸

¹⁶Alexander, *in Sens.*, 137.26–138.5.

¹⁷Alexander, *in Sens.*, 139.9–18; cf. Aristotle, *Sens.* 7, 447b6–9. Alexander takes Aristotle to be arguing that “the activity of one sense is able to be one and the same to a greater extent than the activity of several senses; [...] because of similarity” (Alexander, *in Sens.*, 139.21–23, translations from *On De sensu* are from Towey 2000, often modified). This similarity is explicated below at Alexander, *in Sens.*, 145.2–18, in connection to the same principle (cf. Aristotle, *Sens.* 7, 448a14–18). Accordingly, the closest similarity is between homogeneous objects—as white and black; then, between those heterogeneous objects that are correspondent (both lie on the same place in the spectrum of the quality, so that they are perceptible in the same way)—as white and sweet; and the greatest distance is between heterogeneous non-correspondent objects—as white and bitter. On the view that perceptual qualities are defined as proportions of extremes of the spectra, see Alexander, *in Sens.*, 63.13–66.6 for colours (cf. Aristotle, *Sens.* 3, 440a31–b25); and Alexander, *in Sens.*, 80.22–82.20 for flavours (cf. Aristotle, *Sens.* 4, 442a12–28).

¹⁸Alexander, *in Sens.*, 140.21–24; cf. Aristotle, *Sens.* 7, 447b14–16. Aristotle, interestingly, states the consequent as “perception will *claim* its objects to be one” (ἐν ἑκείνῃ ἐρεῖ). Alexander finds support for this claim in that numerical oneness is judged by the (oneness and identity of) time of perceiving (Alexander, *in Sens.*, 141.10–17; cf. Aristotle, *Sens.* 7, 447b24–25). This claim is used

(7) If two homogeneous perceptibles are not mixed, they are separate and numerically two.¹⁹

Hence, unmixed homogeneous perceptibles may be perceived only in two distinct perceptual activities.²⁰

And since

(8) At one time there can be only one activity of perceiving by a single capacity.²¹

Either there must be two activities of one capacity for the two distinct objects, and hence two activities at different times—not simultaneously (from (8))—or there must be two capacities for the two simultaneous activities. But the latter is a non-starter, as we are in the hypothesis that the two objects are homogenous, hence perceived by one single capacity.

Again, the converse of (6) is also adopted.

(6*) Of a numerically one thing there is numerically one perceptual activity.²²

But, since a mixture is one thing:

(9) Homogeneous perceptibles can be perceived together and simultaneously if they are mixed.²³

However, in this case the two homogeneous perceptibles are perceived *as one*, not as two separate things.²⁴ Exactly the *unity* of mixture is what renders it simultaneously perceptible.²⁵

This argument exposes further requirements for a solution. First, simultaneous perception of two things requires that (ii) the two things are perceived *as two*, not as one.²⁶ Second, (iii) the *activity* of simultaneous perception has to be *one*. And the difficulty lies exactly in this: one activity is required with multiple objects to which it is directed (iv) at *one time*. But it seems that (8) “at one time there might be only one activity”; and (6) “one activity is directed at one single object”; hence at one

by commentators for arguing that simultaneous perception amounts to perceiving physical objects *as one*, see Gregoric 2007: 138–41.

¹⁹ This is implied by Alexander, *in Sens.*, 140.5–6.

²⁰ Alexander, *in Sens.*, 140.24–141.1; cf. Aristotle, *Sens.* 7, 447b16–17.

²¹ Alexander, *in Sens.*, 141.1–4; cf. Aristotle, *Sens.* 7, 447b17–20.

²² Alexander, *in Sens.*, 140.8–10. Indeed, this is introduced earlier than (6); cf. Ross 1906: 219–20.

²³ This follows from the first argument, cf. Alexander, *in Sens.*, 140.5–6, 10–12; cf. Aristotle, *Sens.* 7, 447b9–12.

²⁴ Alexander, *in Sens.*, 140.5–6. This connects it to perceptual discrimination: judging that two perceptible objects are different. Hence they must be perceived *as different* (cf. Alexander, *in Sens.*, 163.17).

²⁵ Further elaboration of the notion of one thing coming about from the mixture can be found at Alexander, *in Sens.*, 143.27–144.19.

²⁶ Pace Gregoric 2007: 133, 138–39. Cf. Marmodoro 2014: 177–78, 220–21.

time only one object might be perceived.²⁷ So, to establish the possibility of simultaneous perception, this view must be dropped, or at least qualified. As we shall see, this consideration reappears in modified terms: the subject of judging will have to be simultaneously indivisible, and divisible into many (§6.4.1).

6.2.3 First Attempt: Different Parts of the Soul

Once the plausible arguments against the possibility of simultaneous perception have been enumerated, and a prominent anti-realist solution has been ruled out,²⁸ Alexander turns to solve the problem. As a first attempt, he suggests that it is *by different parts of the soul*—i.e. with different perceptual capacities²⁹—that we can perceive two objects together (Alexander, *in Sens.*, 157.11–162.11; cf. Aristotle, *Sens.* 7, 448b20–449a5). Heterogeneous perceptibles are indeed perceived by different senses that Alexander considers to be parts of the perceptual capacity,³⁰ so the idea suggests itself. But this account is inadequate for homogeneous perceptibles. In their case one individual would have multiple capacities (or perceptive parts: *merē aisthētika*) that are specifically the same (*homoeidē allēlois*)—i.e. that are for

²⁷ Gregoric (2007: 132–33) claims that the problem of simultaneous perception consists especially in the three principles: (6), (6*) and (8), all of which he takes to be corollaries of the principle according to which the activity of the sense is identical to the activity of the object. For Alexander, cf. Gregoric 2017: 50–52.

²⁸ Alexander, *in Sens.*, 146.1–156.22; cf. Aristotle, *Sens.* 7, 448a19–b17.

²⁹ It is noteworthy that in introducing the issue, “part” is not mentioned by Aristotle. What he claims is only: “perceiving together but with a *different item* belonging to the soul” (ἐτέρω δὲ τῆς ψυχῆς) (Aristotle, *Sens.* 7, 448b20–21). He mentions the existence of “parts” as a consequence of this account: “there will be several parts specifically the same”—πλείω γε μέρη ἔξει εἶδει ταῦτά (Aristotle, *Sens.* 7, 448b24–25) (translations of Aristotle are mine). So it seems that these parts are *parts of sight* (if anything) rather than of soul (and by no means of the eyes as Ross (1906: 234) takes it despite the explicit reference to the soul). Alexander himself interprets Aristotle’s argument this way (Alexander, *in Sens.*, 158.1–16). The idea is that by positing several means of perceiving, the perceptual means is, so to say, divided into parts. Alexander takes up the term and tries to clarify its meaning. He says that “it is not by one indivisible part of the soul with which we perceive everything,” but the perceptive soul consists of different parts that are one by being *continuous*. The idea seems to be that the perceptual capacity is not a simple thing, but it has internal complexity that might be cashed out in terms of different parts of it that nonetheless constitute one single bodily magnitude. It is important in this suggestion that the parts are *different*—they have to be different numerically, but, as it will turn out in the present argument, also specifically. Understood in this way, it is clear why this first attempt will be rejected for homogeneous objects: the parts in the case of homogeneous objects will turn out to be specifically the same and not different. It is also clear that this suggestion may be maintained for heterogeneous perceptibles: the different parts of the perceptive part would be the five special senses. However, this is not exactly Alexander’s view, for he denies that the unity of the perceptual capacity lies in the *continuity* of its parts (cf. Alexander, *in Sens.*, 164.6–7)—which seems to be the view of the Stoics: Alexander, *de An.*, 30.26–31.2; cf. Long and Sedley 1987, Chap. 53; Inwood 1985: 27–41.

³⁰ Alexander, *de An.*, 40.4–5, 11–15.

perceiving objects in one and the same genus. For a perceptual capacity (like any capacity of the soul) is defined in terms of the object with which it is concerned. That is, one genus of perceptibles requires one species of perceptual capacity. So if two objects are the same in genus, they require capacities that are specifically the same.³¹

This consequence, however, is unacceptable. Let us consider an example: perceiving simultaneously two visible things, white and black. Now, the two capacities that this solution postulates are either one visual capacity for perceiving white (V_w) and one for perceiving black (V_b) or two full-blown visual capacities (V_1 and V_2) one perceiving the white and the other the black when the subject simultaneously perceives them. Neither option is acceptable in an Aristotelian account. Now, in the first case V_w and V_b are specifically the same insofar as both are visual capacities, having certain colours as objects. It is quite clear what it means that they are parts of the visual capacity: each of them is capable of perceiving part of the domain of vision: white and black respectively. But this account is in contradiction with the Aristotelian notion of a perceptual capacity: it is an ability to perceive all the perceptibles in its domain (genus) on the scale defined by the two opposites. In the second case V_1 and V_2 are specifically the same in the robust sense of being capable of perceiving the same range of perceptibles. However, it is unclear what it would mean for these capacities to be parts of the visual capacity. Rather, vision seems to be reduplicated. Moreover, it does not make sense in the Aristotelian framework that one subject has two (numerically distinct) visual capacities, or in general two capacities for perceiving the same objects.³² For a perceptual capacity is defined in terms of its object—thus the same object defines the same capacity. And having the capacity for perceiving all objects in the given domain, there is no place for a further capacity with the same domain.³³

Next, Alexander considers an analogy that was suggested by Aristotle himself. The two capacities with which we perceive simultaneously are like our two eyes: they are specifically the same and different in number—and yet they form such a unity that their activity is the same, resulting in one act of seeing.³⁴ But this is not a good analogy. The two eyes together constitute the organ of seeing, thus they together form a unity, being a joint-organ for one single capacity, so that their activity—i.e. the activity of the capacity sight—is one; yet this does not apply for the

³¹ Alexander, *in Sens.*, 158.8–9, 11–12, 15–16; cf. Aristotle, *Sens.* 7, 448b22–25. See also Alexander, *de An.*, 32.23–33.11; and Aristotle, *de An.* 3.2, 426b8–12.

³² One object might be the special object for exactly one capacity. Cf. Osborne 1983: 401.

³³ It is not clear how Alexander understands the argument; it is genuinely ambiguous. Two facts suggest that he takes it in the former way: involving V_w and V_b . First, he claims that the capacities will be specifically the same “because the perceptibles also are the same in genus with each other, for they are all visible” (Alexander, *in Sens.*, 158.14–15). Second, he takes the analogy with the eye to be a possible reply to the issue, and it certainly involves the very same capacities specifically, and different only in number: V_1 and V_2 , cf. Alexander, *in Sens.*, 158.17–159.19. Gregoric (2007: 141) takes it in the former way too, as does Marmodoro (2014: 222–27), though she mistakes a part of the sense to be a sense-organ.

³⁴ Alexander, *in Sens.*, 158.23–25; cf. Aristotle, *Sens.* 7, 448b26–27.

capacities. Two distinct capacities cannot have a single activity insofar as they form a unity by being capacities of one capacity.³⁵ Indeed, being two capacities, they will have two activities, that cannot be simultaneous in light of the previous arguments (especially that in §6.2.2).³⁶

This reasoning shows two things. First, it is not by several distinct capacities of the soul that we can perceive several things together, but (v) *by one and the same perceptual capacity*. It follows then that—since homogeneous as well as heterogeneous objects should be perceptible simultaneously—this one capacity has to be able to perceive all things.³⁷ Again, since the reason for dismissing this preliminary account was that it is not applicable for all cases, in particular for homogeneous perceptibles, (vi) an account that can handle all cases in the same way is preferable to one that can handle different cases in different ways. The latter requirement—the homology of the accounts—is explicit in Aristotle, *de An.* 3.7, 431a24–25,³⁸ and is also taken up by Alexander at *de An.*, 63.23–64.4. Both of these remarks occur in the context of the Point Analogy, hence it is safe to assume that this is one fact that makes this analogy superior.

Let me recapitulate the requirements for a solution that have been identified. If two things are perceptible simultaneously they must be perceptible (i) distinctly, *in the same way*, and (ii) *as two*, not as one. Again, (iii) the *activity* of simultaneous perception has to be *one*, and (iv) this activity has to be in *one time*. One activity will require (v) *one capacity*, indeed one that is able to perceive all kinds of perceptibles. For (vi) the account should be the same for heterogeneous and for homogeneous perceptibles.

³⁵ The disanalogy in other terms. The two eyes, on the one hand, and the one capacity of which the eyes are the organs, on the other, are ontologically distinct: body and capacity. This allows that the two eyes are unified on another level in the one capacity of vision, hence having one activity. But in the case of two visual capacities as constituting one visual capacity there is no such difference in the ontological status that would allow the unification into one activity.

³⁶ Alexander, *in Sens.*, 158.25–159.17; cf. 159.20–161.20. It is noteworthy that Alexander here adumbrates his solution by admitting the adequacy of the analogy with certain provisos (Alexander, *in Sens.*, 159.9–13). As Ross (1955: 233) puts it “it will be that unity (and not the two parts) that is the percipient.”

³⁷ This requirement is explicit in the immediately following passage: Alexander, *in Sens.*, 162.12–163.17, cf. Aristotle, *Sens.* 7, 449a5–7. I discuss this in §6.4.1.

³⁸ The interpretation of the whole reasoning at Aristotle *de An.* 3.7, 431a20–b1 is difficult, for many pronouns have unclear denotation—probably referring to a lost figure, cf. Osborne 1998. Hence it is best to restrict the use of this passage only as a source of the claim about the homology of the accounts, agreeing with e.g. Beare 1906: 281; Hicks 1907: 531; Modrak 1981a: 419; Gregoric 2007: 157; Shields 2016: 339–40; even though effort is made to extract a coherent picture out of the text, cf. Marmodoro 2014: 228–33; and Osborne 1998, who basically extends the account of Ross 1906: 231. For a view according to which the two problems (of homogeneous and heterogeneous objects) need different approaches see Charlton 1981: 107. Again, even though Accattino and Donini (1996: 227–28) note that Alexander explicitly asserts that the problem is the same for the two cases, they doubt that indeed this is true.

6.3 Problem of Opposites

The third argument (Alexander, *in Sens.*, 143.9–26; cf. Aristotle, *Sens.* 7, 448a1–19) concerns simultaneous perception of homogeneous objects, and it is based on the connection between perception and physical movement.

(10) Perception is a sort of movement (or it is by means of movement).

(11) Movements of opposites are opposed.

(12) Opposites cannot coexist in the same thing at the same time. Nor can opposite movements.

Hence, opposites cannot be perceived together.³⁹

The argument can be extended to every pair of homogeneous objects.⁴⁰ Perceptible objects that are intermediate between the opposites—and come to be as a mixture of them in a certain ratio or by means of excess—might be allocated to one of the opposites in virtue of which one is in them in greater amount.⁴¹ Hence it is impossible to perceive two homogeneous objects simultaneously. And this, together with (3), leads to the conclusion that simultaneous perception is impossible for any two objects.

This argument is the most important difficulty for the discussion in Alexander and already in Aristotle; its examination occupies most of Chap. 7 in Aristotle's *De sensu* and most of Alexander's commentary on it. Since it would be difficult to deny (11) or (12), the question is how (10) should be understood so as not to lead to the unacceptable consequence of the impossibility of simultaneous perception of opposites. Moreover, since (vi) a unitary account is preferable—one which explains all cases of simultaneous perception in the same way—the solution for the Problem of Opposites must be coordinated with the solution for heterogeneous perceptibles. So first this latter account has to be seen.

³⁹ Alexander uses the same argument also in *de An.* and *Quaestiones* 3.9 (hereafter *Q.*).

For (10), see Alexander, *in Sens.*, 143.11–12; cf. Alexander, *de An.*, 61.21–24.

For (11), see Alexander, *in Sens.*, 141.12; cf. Aristotle, *Sens.* 7, 448a1–2; *de An.* 3.2., 427a1–2. Alexander provides reasons for clam (11) in parallel passages. The movement in question is assimilation: and assimilations to opposites are opposed (Alexander, *de An.*, 61.23, 28–30). Or, the movement is the reception of the perceptible form: and forms of opposites are clearly opposed (Alexander, *Q.* 3.9, 95.23–25).

For (12), see Alexander, *in Sens.*, 141.13; cf. *de An.*, 61.20–21; *Q.* 3.9, 95.25–26, 97.19–22; Aristotle, *Sens.* 7, 448a2–3; *de An.* 3.2, 426b29–30.

For the conclusion, see Alexander, *in Sens.*, 141.13–14; cf. Aristotle, *Sens.* 7, 448a3–5.

⁴⁰ Alexander, *in Sens.*, 143.19–22; cf. Aristotle, *Sens.* 7, 448a5–8.

⁴¹ Alexander, *in Sens.*, 142. 25–27, 143.17–19.

6.4 Simultaneous Perception of Heterogeneous Perceptibles

Alexander proceeds from a general characterization of the solution (*in Sens.*, 162.12–164.4), through a discussion of Aristotle’s metaphorical accounts (*in Sens.*, 164.5–167.9), and finally to the clarification of the metaphor that enables him to answer even the Problem of Opposites (*in Sens.*, 167.10–168.5). In this section we shall see in detail (§6.4.1) the General Account and (§6.4.3) the metaphor that Alexander prefers—the Point Analogy—and (§6.4.2) only in passing the other metaphor with physical bodies—the Apple Analogy. In the following section (§6.5) I shall turn to the solution for the Problem of Opposites.

6.4.1 General Account

Alexander provides a general account, at Alexander, *in Sens.* 162.12–164.4, commenting on Aristotle, *Sens.*, 449a5–7. He picks up the claim that “the soul perceives things different in genus with different capacities,”⁴² and then explicates that despite the multitude of perceptual capacities there is *one single unity* constituted of them which is *perceptive of all perceptible objects*. For this claim, Alexander invokes Aristotle’s discussion of perceptual discrimination at Aristotle, *De anima* 3.2, 426b8–427a16: how can one judge the difference between objects of different senses—like white and sweet. We learn there that *one single capacity* is required for judging the difference, and since the thing which judges must also be perceiving the objects, there must be one single thing perceiving the objects at the same time. In other words: *discrimination of two heterogeneous perceptibles presupposes the simultaneous perception*⁴³ of them *by one single perceptual capacity*.⁴⁴

⁴² Alexander, *in Sens.*, 162.14–15, 20–22; cf. Aristotle, *de An.* 3.2, 426b8–12. The text is uncertain, being quite lacunose. But even though the way I interpret this sentence makes a good sense, nothing hinges on the exact meaning. The reference “having postulated” might be to Alexander, *in Sens.*, 159.14–19, where it is stated that each sense (capacity) perceives its peculiar object, hence if there are multiple objects different in genus, there will be several distinct capacities.

⁴³ Alexander at *in Sens.*, 163.12 calls this “joint perception” (συναίσθησις). What he means we can see from Alexander, *de An.*, 60.27–61.2: “if there were two perceptible objects, of which you perceived one and I the other, both of us would grasp the difference of the one that one of us perceives in relation to the difference that he does not himself perceive but the other perceives.” (Translations from Alexander, *de An.* are mine.) εἰ δύο ὄντων τῶν αἰσθητῶν τοῦ μὲν σὺ αἰσθοιο, τοῦ δὲ ἐγώ, γνωρίζειν ἑκάτερον ἡμῶν τὴν διαφορὰν οὗ αὐτὸς ᾗσθητο πρὸς τὴν τοῦ οὗ οὐκ αὐτός, ἀλλ’ ἕτερος ᾗσθητο. That is, A perceives *a*, B perceives *b*, and it would be the case that A perceives the difference of *a* from *b* in virtue of perceiving *a*, but not perceiving *b* herself, but *b* being perceived by B. There would not be a single subject that perceives both *a* and *b* “jointly”; cf. Aristotle, *de An.* 3.2, 426b17–20. This point goes back to Plato, *Theaetetus*, 184–86.

⁴⁴ Alexander, *in Sens.*, 162.12–163.17; cf. 164.9–11. The argument is a summary of Aristotle’s argument at *De anima* 3.2, 426b8–29. Three requirements are settled there for perceptual discrimination. (i) That it is by perception, since the objects are perceptible objects; (ii) that it is by one

Even though it is granted that there is one single underlying perceptual capacity—the *common sense*—there is a difficulty for this position.⁴⁵ What is the characteristic object of this one capacity? Since it is supposed that this capacity is able to perceive all kinds of perceptibles, namely all the objects of the special senses (colours, sounds, tastes, etc.), and there is no unitary genus of object formed from the five special objects, for objects from different genera cannot be mixed, it seems that the common sense does not have one genus of object. But lacking such a characteristic object seems to demolish the unity of the capacity.

This problem is not solved here;⁴⁶ it is only the Point Analogy (*in Sens.* 164.5–165.20) that explains the unity of the perceptual part. Rather, Alexander first shifts here from the question of a single object (the perceptibles, *aisthēta*, about which the perception is) to that of a single underlying body (*sōma*).⁴⁷ But since one capacity does not require a single bodily organ (as it should require a single object), but may unify different organs (as its parts in a sense)—as it was the case with the two eyes and sight, the one capacity—the fact that the several sense-organs do not

single subject (or capacity), otherwise it was like the Trojan horse; and (iii) that it is in one indivisible time—i.e. simultaneously. On alternative interpretations of the argument see Polansky 2007: 395–98. This is summarized by Alexander, *de An.*, 60.14–61.19 and *Q.* 3.9, 94.25–95.18. The *De anima* passage foreshadows Alexander’s preferred solution by specifying the sense of simultaneity (*de An.*, 61.15–18). In the *Quaestiones* Alexander speaks in his own terms—explicitly equating perceiving with *judging* (e.g. *Q.* 3.9, 94.31–95.1, 95.11–12), so that he opens the way to his own theory that indeed defines the activity of perceiving as judging, and leads to his own resolution of the Problem of Opposites (discussed below in §6.5). Polansky (2007: 396–97) also emphasizes the terminology used by Aristotle: judging (*krinein*), thinking (*noein*) and especially saying (*legein*); cf. Accattino and Donini 1996: 233. Polansky claims that this is to give generality to the argument for all kinds of cognitive discrimination, as well as to emphasize the type of content involved in perceptual judgement. This latter point I shall explicate in §6.5..

⁴⁵ Alexander, *in Sens.*, 163.18–164.4; cf. Aristotle, *Sens.* 7, 449a8.

⁴⁶ Alexander admits this at *in Sens.*, 164.8–9. Indeed, it cannot be solved in the way it was posed: by identifying a single genus as the object of the perceptual capacity. This is because the five special senses are *parts* of the perceptive soul, forming a hierarchical series. In cases of such hierarchies, however, it is not possible to give an account consisting in the identification of the object, cf. Alexander, *de An.*, 28.14–29.1, 30.17–20. Hence, it is not the case that the unified object of the common sense is the range of common perceptibles, as e.g. Hamlyn (1968b: 205) and Modrak (1981a: 413–14) suggest for Aristotle. Nevertheless, in Alexander it is indeed the common sense which is responsible for perceiving the common objects (Alexander, *de An.*, 65.11–22). Were this the case—i.e., if common sense were *defined* as the faculty for perceiving common perceptibles—common sense would be a special sense distinct from the five special senses. But Aristotle explicitly rules this out in *De anima* 3.1. The same reasoning applies to the suggestion that the object of common sense is *physical objects as such*, see Charlton 1981: 108. This problem is observed by Marmodoro 2014: 189–212. But her proposal—that the common sense has another type of individuating condition: the type of content—is not convincing.

⁴⁷ Alexander, *in Sens.* 164.5–6. “Next he explains in another way of what one underlying thing this perceptive <thing> is, i.e. of what body there is a perceptive capacity.” Ἐξῆς δὲ λέγει πως ἄλλως, τίνος τὸ αἰσθητικὸν τοῦτο ἐνός ἐστιν ὑποκειμένου καὶ τίνος σώματος αἰσθητικῆς δυνάμεις ἐστι. It seems to be important in the shift that *underlying thing* (ὑποκειμένου) might mean both the object and the underlying body or subject.

constitute a unitary organ (though they constitute a unitary sensory structure⁴⁸) is not troubling for Alexander. Thus, by making the shift, nothing hinders talking about one capacity. Several objects define several capacities; but several organs do not. As a consequence of this move, Alexander also shifts from claiming that we perceive heterogeneous objects by different perceptual capacities to saying that the perceptual capacity “perceives different objects through different parts of the body, i.e. *through different organs*.”⁴⁹

To clarify the issue: what is required for the solution is one *unitary capacity* of the soul that may have sufficient diversity or *complexity*, so that it can perceive several things simultaneously. In short: it must be *one* and *many* (complex⁵⁰) at the same time.⁵¹ This is apparently granted in what follows, so this can be taken as a *General Account*.⁵²

To explain how this is the case, Alexander appeals to the Point Analogy. It is important to see that Alexander invokes the analogy quite forcedly.⁵³ For Aristotle in *De sensu* does not even seem to explicate the Point Analogy. What he offers is a dense expression of a possible option of a solution:

Is that [capacity], then, which perceives white and sweet, some unity *qua* indivisible in actuality, but different, when it has become divisible in actuality?⁵⁴

Moreover, immediately after this, closing his investigation on simultaneous perception, Aristotle turns to the Apple Analogy.⁵⁵

Yet, as it will become clear shortly, Alexander prefers the Point Analogy to the Apple Analogy. He does so because the Apple Analogy does not fit the General

⁴⁸ Cf. Kahn 1966: 68–69; Everson 1997: 139–48.

⁴⁹ Alexander, *in Sens.* 164.20–21, cf. 164.4.

⁵⁰ An additional requirement is that the complexity of the capacity has to be mirrored in the complexity of the physical structure, see Marmodoro 2014: 191–94.

⁵¹ It is instructive to understand the diversity of the judging subject “in being” as “divided in its *relations*” and grasping them together as “bringing them into one relation with one another” as Beare (1906: 279–81) takes it, cf. Modrak 1981a: 419; Marmodoro 2014: 246; Shields 2016: 274. However, this in itself is not yet a solution, for the coming to bear of several relations has a basis in real occurrent changes, cf. Alexander, *in Sens.*, 126.25–127.12. See §6.5.2.

⁵² Hence, I disagree with Ross (1906: 230) that this is taken by Alexander as a full-blown solution for the problem, and that it is connected to the Apple Analogy rather than to the Point Analogy.

⁵³ However, Ross (1906: 230–31) believes that the passage “without doubt” refers to the Point Analogy. Cf. Marmodoro 2014: 242–48.

⁵⁴ ἄρ' οὖν ἢ μὲν ἀδιαίρετόν ἐστι κατ' ἐνέργειαν, ἔν τι ἐστι τὸ αἰσθητικὸν γλυκέος καὶ λευκοῦ, ὅταν δὲ διαίρετόν γένηται κατ' ἐνέργειαν, ἕτερον. (Aristotle, *Sens.* 7, 449a10–13.) According to Charlton (1981: 107) this picks up Aristotle, *de An.* 3.2, 427a2–9, an unsatisfactory solution. Gregoric (2007: 136) takes this to mean as follows: when it perceives two things simultaneously the perceptual part of the soul is undivided, when consecutively, it is divided. Then he finds this unattractive, for what is required is that it is both undivided and divided. The problem with this suggestion is that this is a non-starter as an explanation of simultaneous perception, for this simply takes that as one unproblematic case.

⁵⁵ Gregoric (2007: 136) believes that closing the investigation with the Apple Analogy implies that it is the preferred view here.

Account, and because he manages to interpret the Point Analogy in a way that is highly illuminating for the case of heterogeneous perceptibles, and may be applied—with some additional nuances—to homogeneous objects too.

So Alexander identifies two serious solutions (attributing them to Aristotle) in his commentary *in Sens.*: the Point Analogy and the Apple Analogy. He introduces the analogies with the General Account, which he formulates in a way that helps him to argue for his preference for the Point Analogy. Since we do not possess Alexander's commentary on Aristotle's *De anima*—though *Quaestiones* 3.9 clearly functions as a commentary on the last part of *De anima* 3.2⁵⁶—we might only judge Alexander's interpretation of it indirectly. It seems that he found only one solution there: he apparently took—quite reasonably—the accounts at Aristotle, *De anima* 3.2, 427a9–11 and 427a11–14 together to be the expression of the Point Analogy. Since he does not explicate the Apple Analogy except in his commentary *in Sens.*, it is safe to judge that he did not find it in Aristotle's *De anima*.⁵⁷

Let us see, in short, what the Apple Analogy consists in and how it may explain simultaneous perception. Then, we can see why Alexander prefers another solution to this.

6.4.2 Apple Analogy

The analogy (Alexander, *in Sens.*, 165.20–167.9; cf. Aristotle, *Sens.* 7, 449a13–20) is this. “As it can be with the things themselves, so too it is with the soul.”⁵⁸ That is, “as it can be with bodies and things underlying the senses that something, being *numerically the same*, possesses *several affections* within itself,” “so too can it be like this with the soul.”⁵⁹ Getting to his conclusion about the soul, Alexander offers an example for the analogy: an apple.

The apple, being *numerically one*, is at the same time sweet, yellow or white, and fragrant, and the affections differ from one another and are *perceptible by different senses*.⁶⁰

The difference of the several affections (the qualities or properties) of the apple lies in their being perceptible by different senses; in general: they are different in being (*to einai*) or in account (*logos*); in essence (*to ti ēn einai*).⁶¹ Since perceptible qualities differ in genus or species (i.e. in their form—essence) by virtue of defining different senses, such that the qualities are perceptible by the different senses they

⁵⁶ See Sharples 1994: 135.

⁵⁷ Perhaps Alexander identified the passage in Aristotle, *de An.* 3.2, 427a2–5 as the Apple Analogy, but left it treated in general terms, and dropped it as inadequate (Alexander, *Q.* 3.9, 95.27–96.4).

⁵⁸ Aristotle *Sens.* 7, 449a13–14. A thorough account of the Apple Analogy is given by Gregoric 2007: 137–40.

⁵⁹ Alexander, *in Sens.*, 165.25–26, 166.2.

⁶⁰ Alexander, *in Sens.*, 165.26–166.2.

⁶¹ Alexander, *in Sens.*, 166.11–13; cf. Aristotle *Sens.* 7, 449a16.

define, their difference in being is rightly identified as being perceptible by different senses. Alexander appeals to the same example of the apple in arguing for the unity of the soul in his *On the Soul*, where it serves to illustrate the way of dividing “the soul by enumerating the capacities it has and by *ascertaining the differences* between them.”⁶²

So, just as the qualities of the apple are different insofar as they are perceptible by different capacities, there are several different perceptual capacities by means of which the one unitary perceptive soul perceives the different qualities. “The perceptive <soul>, being *one* [‘in respect of that which underlies’], is able to be aware and judge several different things simultaneously because it possesses *several capacities*”⁶³ that are “different from each other, in respect of which it is possible to be active at the same time.”⁶⁴

Alexander disapproves of the Apple Analogy as a solution in the end, because it implies that the diverse heterogeneous objects are perceived by *different capacities* of the soul.⁶⁵ But what is required is exactly the reverse: *one capacity perceptive of all perceptible objects* (according to the General Account). Moreover, even though this analogy fits with heterogeneous objects, it does not offer an account for homogeneous opposites.⁶⁶ Just as the apple cannot be white and black at the same time,⁶⁷ the soul cannot perceive these qualities with different capacities, for they are objects in the same genus, being perceptible by the same capacity.⁶⁸

The other aspect of the analogy—that it involves a single body, the apple—makes it attractive to commentators.⁶⁹ They argue that the role of simultaneous perception, and especially this analogy is to explain the perception of physical objects. It will

⁶²Alexander, *de An.*, 31.2–4; trans. Caston (2012). For the whole discussion of the analogy, see Alexander, *de An.*, 30.26–31.6.

⁶³Alexander, *in Sens.*, 166.2–4. ὥς μίαν οὖσαν τὴν αἰσθητικὴν πλειόνων καὶ διαφόρων ἅμα ἀντιληπτικὴν τε καὶ κριτικὴν εἶναι τῷ πλείους δυνάμεις ἔχειν. The inclusion is from *in Sens.*, 167.8.

⁶⁴Alexander, *in Sens.*, 167.8–9; cf. 166.15–167.4. πλείους δυνάμεις καὶ διαφοροὺς ἀλλήλων ἔχει, καθ’ ὅς ἅμα οἶόν τέ ἐστιν ἐνεργεῖν.

⁶⁵See Alexander, *in Sens.*, 168.5–10. We can see this also from the fact that the Apple Analogy does not appear in the parallel passages (*de An.*; *Q.* 3.9) that are dealing with the connected issue of perceptual discrimination.

⁶⁶Alexander, *in Sens.*, 167.10–21. Gregoric (2007: 142–43) suggests that Aristotle merely extends the Apple Analogy to homogeneous perceptibles *a fortiori*, in line with principle (3) (in §6.2.2).

⁶⁷Pace Marmodoro (2014: 252–53) who simply asserts that it can be: at different parts. But this ruins the analogy.

⁶⁸Alexander, *in Sens.*, 168.13–15. Ross (1906: 231–32) thinks the Apple Analogy should rather be complementary to the Point Analogy, explicating that the relation between the perceptions is like that between their objects. Gregoric (2007: 156–61) argues even for the identity of the two accounts.

⁶⁹E.g. Charlton 1981; Modrak 1981a; but also Gregoric 2007. Cf. Marmodoro 2014: 177, who does not find the analogy fully adequate, but invokes Aristotle, *Somm.Vig.* 455a12–22 as the final account, referring to a *further power* of common sense (Marmodoro 2014: 255–61). Cf. Osborne 1983, 1998.

become clear that this function is not identical with simultaneous perception, rather perceiving physical objects as one thing is an additional act that depends on simultaneous perception (§6.5.1).

6.4.3 Point Analogy

In order to use his preferred explanation, Alexander interprets Aristotle's dense remark (*Sens.* 7, 449a10–13) as invoking the Point Analogy, and finds a reference immediately preceding it (*Sens.* 7, 449a9–10) to explicate the analogy in Aristotle, *De anima* 3.2, 427a9–23. We may ask two questions in this regard. First, whether or not this is a plausible interpretation of these lines in Aristotle—i.e. is it the Point Analogy that is meant here? Second, whether Alexander's interpretation of the analogy itself is a plausible and satisfactory solution for the problem of simultaneous perception? Once we have seen Alexander's account itself, we may attempt to answer these questions in §6.6.

Alexander sets out the analogy briefly in his commentary (Alexander, *in Sens.*, 164.5–165.20) and adds further details in the parallel passages: *de An.*, 63.6–64.11 and *Quaestiones* 3.9, 96.8–97.20. Hence, I shall use all these treatises to interpret the account. Let me first set out the easier side of the analogy, the point, before turning to the difficult question of how it works for the soul. In this section I focus on how the Point Analogy can solve the problem of heterogeneous perceptibles.

For Aristotle, a point in this context is one indivisible unity, but it divides a line into two segments, hence it can be taken as many.⁷⁰ Alexander transforms this image so that the point is the centre of a circle, which, by being numerically one and without extension or parts, is indivisible; and as being the *limit* of several lines beginning from it or ending at it, it may be said to be many.⁷¹ It is divisible into these different lines, being the centre in which all the radii are joined.⁷² The different radii run from the periphery to the centre, hence the centre itself—their limit—has relations to the other limits, i.e., the different points on the periphery, thus it is divisible accordingly.⁷³ Understood either in Aristotle's or Alexander's way, the point is a numerical

⁷⁰ Aristotle, *de An.* 3.2, 427a9–14; cf. 3.7, 431a20–24. Most commentators agree that Aristotle means a point that divides a line: Rodier 1900: 394; Ross 1906: 230–31; Hicks 1907: 450; Henry 1957: 433; Ross 1961: 36; Hamlyn 1968a: 128; Charlton 1981: 106; Accattino and Donini 1996: 230. Beare (1906: 280) specifies it as a point on the time-line, i.e., a “now.” For interpreting Aristotle as meaning the intersection of several lines (as Alexander does) see Marmodoro 2014: 245; Polansky 2007: 399; Modrak 1981a: 417–18; and Kahn 1966: 56. Gregoric (2007: 150–53) argues that the two images of the point should be taken to explain two distinct phenomena: the divided line—the discrimination of opposites; the center of the circle—the discrimination of heterogeneous objects.

⁷¹ Alexander uses several words for the point: limit (ὄρος); point (σημείον); terminus (πέρας); centre (κέντρον).

⁷² Alexander, *in Sens.*, 165.17–20; cf. *Q.* 3.9, 96.14–18, 20–22; *de An.*, 63.8–12.

⁷³ Alexander, *Q.* 3.9, 96.19–20, 22–24.

unity (one in subject, *kata hypokeimenon*⁷⁴), but it has plurality in its being, in its relations to the lines terminating in it. In Alexander's account the point has plurality also in its relations to the end-points of the radii on the circumference of the circle.

Thus, there are quite a few items involved in Alexander's picture: (a) the centre of the circle; (b) the radii; (c) the different termini of the radii on the circumference. Translating the image to the soul, Alexander, in the *Questiones*, claims "each of these [things that judge] judges the affection on its own particular line."⁷⁵ Hence we may identify a further item: (d) the affections on the lines. It is clear that what judges (perceives) is (a) the centre. Again, what is judged is (d) the affection corresponding to (b) a particular radius. It seems *prima facie* obvious that what is judged is identical to (c) the points on the circumference. However it shall soon be clear that this is not the case.

As we have seen, the perceiving thing must be one in number, indivisible, just like the point taken in itself:

For in so far as it is itself taken and thought of in itself as being an indivisible limit of all the sense-organs, it will be *in activity* and by its own nature an indivisible one, and this will be able to be aware and perceptive of all perceptibles. [...] In this way, in so far as it is one thing in respect of the underlying subject, that which perceives all the perceptibles and judges them will be the same thing.⁷⁶

But it also has to be many, for it has to be able to apprehend many different things at the same time:

When it is *divided by the activities in respect of the sense-organ*, it will be many. [...] Insofar as it is divided by the activities in respect of the sense-organs, coming to be many in a way, it will perceive several different things together.⁷⁷

First, it is noteworthy that in these passages Alexander is commenting properly: he describes the distinction between oneness and multiplicity in terms of indivisibility and divisibility *in activity*—just as one can find it in the corresponding passage of Aristotle (*Sens.* 7. 449a10–13). In this way, he makes a strong connection between this remark of Aristotle's and the Point Analogy—even though Aristotle does not indicate that the distinction should be understood in these terms.⁷⁸ Thus, Alexander secures his interpretation as plausible. On the one hand, the perceiving thing is said

⁷⁴Alexander, *in Sens.*, 165.18.

⁷⁵Alexander, *Q.* 3.9, 96.25. ὃν ἕκαστον κριτικὸν ὃν τοῦ ἐν τῇ ἰδίᾳ γραμμῇ πάθους ὄντος, translations of *Q.* 3.9 are from Sharples 1994.

⁷⁶καθόσον μὲν γὰρ αὐτὸ καθ' αὐτὸ λαμβανόμενόν τε καὶ νοούμενον ἀδιαίρετον πέρας τι ὃν πάντων τῶν αἰσθητηρίων, ἐνεργεῖα τε καὶ τῇ αὐτοῦ φύσει ἀδιαίρετον ἔν τι ἔσται, καὶ τοῦτο πάντων αἰσθητῶν ἀντιληπτικόν τε καὶ αἰσθητικόν. [...] οὕτω δὲ καθὸ μὲν ἔν τι ἔστι κατὰ τὸ ὑποκείμενον, ταῦτόν ἐσται τὸ πάντων τῶν αἰσθητῶν αἰσθανόμενον καὶ κρίνον αὐτά (Alexander, *in Sens.*, 165.3–6, 8–9.)

⁷⁷ὅταν δὲ ὑπὸ τῶν κατὰ τὸ αἰσθητήριον ἐνεργειῶν διαιρεθῇ, πλείω ἔσται. [...] καθὸ δὲ ὑπὸ τῶν κατὰ τὰ αἰσθητήρια ἐνεργειῶν διαιρεῖται, πολλὰ πῶς γινόμενον πλειόνων καὶ διαφερόντων ἅμα αἰσθησεται. (Alexander, *in Sens.*, 165.7–8, 9–11.)

⁷⁸Although Aristotle mentions divisibility according to actuality at *de An.* 3.2, 427a5–9, just before presenting the point analogy, he explicitly rejects this option as not allowing for simultaneity.

to be one thing, hence it must have one activity at one time—recall (8) from §6.2.2. On the other hand, it is not *prima facie* obvious what it means that “it is *divided by the activities in respect of the sense-organs*.” What Alexander says about this here, referring to Aristotle’s *De anima*, is quite dense:

For being a limit of all the sense-organs *in the same way*, when *the activity* comes about *in respect of several sense-organs*, it is taken as divided and more than one. To the extent that it comes to be a boundary of several things together, the same <limit> *in the activities in respect of several sense-organs*, to this extent one thing would perceive several things of different genera together.⁷⁹

As it stands, this is an explanation of simultaneous perception only of *heterogeneous* perceptibles. It seems to involve several activities in respect of each sense-organ that is being used in perceiving the relevant perceptible. For example, in perceiving white and sweet together, by sight and taste, there will be activities in respect of the relevant organs: the eyes and the tongue. To see what these activities might be, we should turn to the parallel passages, especially to *Quaestiones* 3.9.

Alexander offers two alternative interpretations. According to the first one, the Point as Organ interpretation (*Quaestiones*, 3.9, 96.31–97.8) the point is to be identified with the *primary sense-organ*. Hence the point should be a body, a magnitude with extension. In this case the lines were the connections between the peripheral sense-organs and the central organ, and *along these lines* were the affections *transmitted*⁸⁰ from the periphery to the central organ. But together with the view that perception involves affections, i.e. material changes, the familiar Problem of Opposites arises. The different affections from opposed objects cannot come to be in the same part of the central organ—just like it does not come to be in the same part of the peripheral organs, or the appearance of them in the same part of mirrors. Thus the central organ as a body or magnitude will not only be divisible, but indeed the affections would be in different parts of it, hence it would not be one single thing as is required by the analogy.

It is clear from this that the radii do not only contain the affections, but they are indeed responsible for the *transmission* of the affections. This is confirmed by the alternative, preferred, interpretation: the Point as Capacity. Accordingly (*Quaestiones*, 3.9, 97. 8–19, see in §6.5.2), the point is to be identified with the *capacity* of the central sense-organ, the *common sense*.⁸¹ This capacity, being the *form* of the body in which it resides, senses and judges the things that produce alterations in that body, *according to the transmission* from the peripheral sense-organs. As a capacity, it is *single, incorporeal, indivisible* and *similar in every way and every part*. It can become many, however, by perceiving (in the same way) the

⁷⁹ πάντων γὰρ τῶν αἰσθητηρίων ὁμοίως ὃν πέρας, ὅταν κατὰ πλείω γίνηται ἢ ἐνέργεια αἰσθητήρια, ὡς διηρημένοι καὶ ὡς πλείω λαμβάνεται· καθόσον δὲ ἅμα πλείονων γίνεται πέρας τὸ αὐτὸ ἐν ταῖς κατὰ πλείω αἰσθητήρια ἐνεργείαις, κατὰ τοσοῦτον ἂν καὶ ἐν τῶν πλείονων τε καὶ ἀνομογενῶν ἅμα αἰσθάνοιτο. (Alexander, *in Sens.*, 165.13–17.)

⁸⁰ “Transmit” renders *diapempein*: Alexander, *Q.* 3.9, 96.33, 36; and *diadosthai*: *Q.* 3.9, 97.5, 6.

⁸¹ It is clear from Alexander, *de An.*, 63.6–28 that Alexander identifies this capacity as the common sense.

changes in each part of the ultimate sense-organ. Thus, by the judgements of the several different parts the capacity becomes several in a way.

Now, the Point as Capacity interpretation is most probably the same as the account we find at Alexander, *in Sens.*, 165.13–17. Hence we may identify the activity that comes about *in respect of a sense-organ* as the perceiving activity coming about *according to the transmission*. This latter notion seems to be this.⁸² In perception, first the peripheral organ is affected by the perceptible object. Then this affection is transmitted from the peripheral organ to the primary sense-organ. The result of the transmission is assimilation to the perceptible object. In cases when there are several such assimilations in the primary organ (in different parts), the common sense perceives several objects at the same time. It is related to the different objects in virtue of perceiving by means of being related to the different assimilations. Since each affection is transmitted on a single route, and different affections on different routes, the *common sense is related to different means of transmission* from periphery to centre. If the different objects are *heterogeneous*, their transmissions are through different routes and from *different sense-organs*. Thus, in simultaneous perception of heterogeneous perceptibles the objects are judged by alterations produced in the primary sense-organ *according to the transmissions* from different sense-organs.

This can be interpreted as follows. The common sense is able to determine to which sense-modality a given perception belongs *by the route of transmission* of the given perceptual change.⁸³ This is possible because the routes from the different organs differ. This interpretation can be corroborated by appealing to the last parallel passage. In his *De anima* (63.12–64.3), Alexander emphasizes the connection between the activity of common sense and the affections in the primary sense-organ. This sheds light on the way the different objects are perceived according to the transmission. For the sense capacity is many on account of being the terminus of the several different *movements* transmitted from the different peripheral organs.⁸⁴ When several such movements arise in the primary sense-organ, several objects are perceived simultaneously. Since the movements are transmitted from different organs, heterogeneous perceptibles are judged in virtue of the difference of the peripheral organ that transmits or reports⁸⁵ the affection.

Granted that the theory is consistent in the three treatises, it is noteworthy that the expression of it is not only less explicit in the *Commentary on De sensu* than elsewhere, but it is less satisfactory too. For, in the commentary, Alexander understands the division of the activity in terms of the peripheral sense-organs, so that this

⁸² See also the parallel account at Alexander, *de An.*, 64.4–9. Cf. Alexander, *in Sens.*, 19.17–20.

⁸³ Cf. Aristotle, *Insomn.* 3, 461a28–b3.

⁸⁴ “For insofar as the perceiving capacity is the terminus of all movements which come about through the [peripheral] sense-organs in the ultimate sense-organ (for the transmission from the perceptible objects through the sense-organs extends to it and is towards it), it will be many, coming to be a terminus of many and different movements.” (Alexander, *de An.*, 63.13–17.)

⁸⁵ Caston (2012: 146–47, n. 362) emphasises the *subservient* role of the special senses in reporting or transmitting perceptual information to the common sense.

account can work only for heterogeneous perceptibles. Alexander needs to clarify that he meant to apply his solution for homogeneous opposites too—and he does this rather concisely, a few pages below (at *in Sens.*, 168.2–5, see §6.5.2). The *Quaestiones* 3.9 and *De anima* passages, on the other hand, connect the division of the activity to the different *parts* of the central organ and to the *movements* coming about in those parts; the transmission is mentioned only to explain how the different genera of perceptibles are to be distinguished—and they explain this rather clearly (see §6.5.2 for details).

Now, the picture is this. First, (a) the centre of the circle is what perceives: the perceptive part or capacity of the soul—the common sense. Then, (d) the affections on the lines are the things that are judged, and (b) the lines themselves are the routes of transmission from the periphery to the centre. Hence (c) the points on the periphery must be the peripheral sense-organs themselves, rather than the objects perceived.

There is, however, a difficulty with the image: it applies—as it stands—only for heterogeneous perceptibles. Two heterogeneous objects may be distinguished on account of being transmitted by different lines. But two homogeneous perceptibles should have been transmitted by the same line, and be present together at the same time at the terminus—which is impossible, since they are opposites.⁸⁶ Thus, if this analogy is to answer the Problem of Opposites too, it must be refined.⁸⁷ How Alexander does this shall be the topic of the next section.

6.5 Judgement and Affection

Now we may turn to the Problem of Opposites as expressed in §6.3. Recall the argument.⁸⁸

(10) Perception is a sort of movement or it is by means of movement.

(11) Movements of opposites are opposed.

(12) Opposites cannot coexist in the same thing at the same time. Nor can opposite movements.

⁸⁶This is why the Point as Capacity interpretation in itself is insufficient for the explanation. Polansky (2007: 400) also emphasizes that it is the sense which is represented by the point, but he interprets affection in a non-material sense, hence believes that the Problem of Opposites does not arise. The same interpretation is expressed by Gregoric 2017 for Alexander's theory. We shall see below that the Problem of Opposites does arise.

⁸⁷Modrak (1981a: 418) thinks that the Point Analogy is easily adoptable to opposites, for "one can envision the lines moving in opposite directions." I doubt that it is easy to envision this.

⁸⁸I shall restrict the investigation in this section to the features of the solution that are highly relevant to the Problem of Opposites. However it is desirable to give a comprehensive account of the solution (which I do plan to give at another occasion) in order to assess its consequences for Alexander's theory of perception, and in general for his philosophy of soul.

Hence, opposites cannot be perceived together.

Since (11) and (12) are obviously true, the question is how (10) should be understood to allow simultaneous perception of opposites. Alexander's solution is this: "perception, even if it seems to come about by means of an affection, is nevertheless itself judgement."⁸⁹ We have to see first (§6.5.1) what it means to be a judgment; then (§6.5.2) how judgement relates to the material change involved in perception; so that we can assess (§6.5.3) how this account can solve the Problem of Opposites by the Point Analogy, but (§6.5.4) not by the Apple Analogy.

6.5.1 Perception as Judgement—Opposition in Judgement

Judgement (*krisis*)⁹⁰ is the activity of all kinds of cognitive capacities: not only of perception, but of representation (*phantasia*), opinion (*doxa*), knowledge (*epistēmē*), and intellect (*nous*).⁹¹ Among the features of judgement Theodor Ebert (1983) identifies, the most important is that it can be true or false, hence erroneous, so that its content is *propositional*.⁹² It is a sort of deciding—as in perceptual discrimination. Moreover, it is arguable that its propositional content is of predicational form: 'S is F'.⁹³ In the case of perception (and *phantasia*), there are restrictions for the terms in

⁸⁹ Alexander, *in Sens.*, 167.21–22; cf. *Q.* 3.9, 97.25–27, 98.6–10; *de An.*, 63.28–65.1, 84.4–6.

⁹⁰ *Krisis* (κρίσις) picks out the active side of perceiving—together with awareness: *antilēpsis* (ἀντίληψις)—the two terms being used mostly interchangeably. The term is translated (especially in Aristotle) in different ways: *judgement*—e.g. Towey 2000; Sharples 1994; Emilsson 1988: 121–25; *discrimination* or *discerning*—especially Ebert 1983; cf. Shields 2016; Corcilius 2014; Gregoric 2007; *cognition*—Caston 2012: 139–40, n. 346; cf. Ross 1906: 217, 233. Two features that Caston attributes to *judgement* need to be disregarded: that it involves concepts (otherwise animals could not have it); and that it involves endorsement. Since *phantasia* does not involve endorsement (Alexander, *de An.*, 67.18–20, 71.10–21) this clearly is not meant. Even though the generality of the term "cognition," and its clear contrast to practice (Alexander, *de An.*, 73.20–26, 75.13–15) renders it a quite good translation of *krisis*, if we bear in mind the restrictions concerning concepts and endorsement, "judgement" picks out the propositional type of content more clearly.

⁹¹ Alexander, *de An.*, 66.9–19. Cf. *de An.*, 78.10–21, where in addition *antilēpsis* (awareness), *synkatathesis* (endorsement or assent), *hypolēpsis* (supposition), *logizesthai* (calculation), *dianoesthai* (thinking), and *katalēpsis* (securing) are also subsumed under *krisis*.

⁹² Cf. Emilsson 1988: 122. Note the use of "saying" in connection to this activity, which occurs also in Aristotle (see §6.4.), cf. Hicks 1907: 448; Polansky 2007: 396; Bergeron and Dufour 2008: 307.

⁹³ Pace Ebert 1983, who argues that content expressing sameness or difference (e.g. "x differs from y") is operative, being more basic—hence *krisis* should be translated as "discrimination." Corcilius 2014—rightly—objects that the discrimination of difference is not that basic act. Instead, he interprets *krisis* (discrimination) as transforming the sensory input into phenomenal content, separating the perceptible form from its matter. This is not yet awareness, the latter being the immediate consequence of the separation, leading to motor responses in the animal. Since neither interpretation admits predicational content, they cannot be applied for Alexander—nor, I am inclined to think, for Aristotle, especially in the case of simultaneous perception.

the content: the subject S has to be an individual that might bear perceptible properties; the predicate F must be a perceptible feature predicated of S. This kind of content is most apparent in our passages, though there are independent reasons to take Alexander to attribute it to perception.⁹⁴

Given this, we can see how identifying perception with judgement can solve the Problem of Opposites. The problem stemmed partly from (11) “movements of opposites are opposed.” The solution that

(10*) Perception is judgement.

is an adequate solution, because

(11*) There is no opposition in a judgement of opposites.⁹⁵

So,

(12*) Judgement of opposites that they are opposites can be simultaneous.⁹⁶

Hence simultaneous perception of opposites is possible.

To see the solution in detail we need to look at the explication of (11*): what it is to be *opposition in judgement*. This also supports the understanding of *krisis* as judgement involving predication content. Let us see Alexander’s explanation.

That which is opposite in affection is different from that which is <opposite> in judgement. For in affection white <is opposite> to black but in judgement the judgement {1}⁹⁷ concerning the white <thing> that it is white and the <judgement> {2} of the black <thing> that it is black are not opposites. For these <are> *true together*; and it is impossible for opposite judgements to be true together. But what is opposite to the judgement {1} concerning the white <thing> that it is white is the <judgement> {3} concerning the white <thing> that it is black. For this reason these latter <judgements> never *exist together* in {4} *the judgement in accordance with perception*, but the former ones are—for they are not opposite.⁹⁸

⁹⁴ First, since perception provides motivation for action in animals, it has to be able to present external objects to the animal *as* to be pursued (or avoided), or, more specifically, *as food*, *as nutritious*, *as dangerous*, Sorabji 1974, 1992. This argument is restricted to accidental perception, however, which is quite unproblematic. Second, concept formation—if it depends on perception—requires that what is general is somehow already in the content of perception, since the perceptible features have to be applicable to multiple subjects. In seeing a white wall the subject has to perceive the wall *as white*, or, in general, has to perceive S *as F*, cf. Caston (unpublished *as of now*). Third, the explicit treatment of the truth-conditions of *phantasia* (Alexander, *de An.*, 70.23–71.5) implies that its content is “S is F.” For a true *phantasia* is about a real thing in the world (S) which is such as the thing (F).

⁹⁵ Alexander, *in Sens.*, 167.22–168.2.

⁹⁶ Alexander, *in Sens.*, 167.25–168.1.

⁹⁷ I numbered the examples of judgements in this and the following text for ease of reference.

⁹⁸ ἄλλο δὲ τὸ ἐν πάθει ἐναντίον καὶ ἄλλο τὸ ἐν κρίσει. ἐν πάθει μὲν γὰρ τὸ λευκὸν τῷ μέλανι, ἐν κρίσει δὲ οὐχ ἡ κρίσις {1} ἡ περὶ τοῦ λευκοῦ ὅτι λευκὸν οὐδ’ {2} ἡ τοῦ μέλανος ὅτι μέλαν ἐναντία· αὐτὰ μὲν γὰρ ἅμα ἀληθεῖς· ἀδύνατον δὲ τὰς ἐναντίας κρίσεις ἅμα ἀληθεῖς εἶναι. ἀλλ’ ἔστι {1} τῇ περὶ τοῦ λευκοῦ κρίσει ὅτι λευκὸν ἐναντίον {3} ἡ περὶ τοῦ λευκοῦ ὅτι μέλαν. διὸ

In this way in judgement it is impossible to suppose that {5} what is white is white and black together; and for this reason, again, in judgement what is like this *cannot exist together*. But to say that {2} black is black and that {1} white is white is not impossible, because it is not even opposite.⁹⁹

We may identify two kinds of proposition in this account as the content of perception.¹⁰⁰ First, there are propositions with a singular subject and one feature predicated of it: *x* is *F*—“the white is white” {1}; “the black is black” {2}; “the white is black” {3}.¹⁰¹ Second, there are propositions in which several predicates are combined: *x* is *F* and *G*—“the white is both white and black” {5}, viz. “the same thing is white and black.”¹⁰²

Now, Alexander’s point here is that when propositions of the former type are combined to form propositions of the latter type, some combinations will be possible, while others will be impossible. Possibility of combination depends on whether the combined elements are contradictory or not. If they do not contradict each other—can be “true together”¹⁰³—they can belong together to the judging subject.¹⁰⁴ That is, they can exist together (συνυπάρχει) in a single judgement. This single judgement is the perceptual judgement: the “judgement in accordance with perception” (ἡ κατὰ τὴν αἴσθησιν κρίσις).¹⁰⁵

Thus, two items are involved in an opposition in judgement and in the corresponding lack of opposition, since at least two items might be either opposite or not. The two items are two judgements that together compose a complex judgement: {1} together either with {2} or with {3} compose one judgement {4}. When the subject in the two simple propositions is the same and the predicates are opposed, there will be opposition in judgement, for these cannot hold together: “*x* is *F* and *x* is *G*”—e.g. {1} and {3}: “*w* is white and *w* is black.” On the other hand, when the subjects of the different predicates differ, the predicates may be opposed without thereby being a contradiction: “*x* is *F* and *y* is *G*”—e.g. {1} and {2}: “*w* is white and *b* is black.”

αὗται μὲν οὐδέποτε συνυπάρχουσιν ἐν {4} τῇ κατὰ τὴν αἴσθησιν κρίσει, ἐκεῖνα δέ· οὐ γὰρ εἰσιν ἐναντία. (Alexander of Aphrodisias, in *Sens.*, 167.22–168.2; cf. *Q.* 3.9, 97.28–30; *de An.*, 64.12–17.)

⁹⁹ ἐν κρίσει πάλιν ἀδύνατον τὸ {5} τὸ λευκὸν ὁμοῦ μὲν λευκόν, ὁμοῦ δὲ μέλαν ὑπολαμβάνειν εἶναι. διὸ πάλιν ἐν κρίσει τὸ οὕτως ἔχον ἀσυνύπαρκτον. {2} τὸ μὲν μέλαν μέλαν, {1} τὸ δὲ λευκὸν λευκὸν εἰπεῖν οὐκ ἀδύνατον, ὅτι μὴδ’ ἐναντίον. (Alexander, *Q.* 3.9, 97. 32–35.)

¹⁰⁰ In the interpretation I am generally in agreement with Accattino and Donini 1996: 233. See also Alexander, *de An.*, 64.12–17. This passage uses “saying” (*legein*) to describe the judging activity.

¹⁰¹ Even though there is linguistic ambiguity in “the white is white” (*to leukon lekon esti*) as to whether the subject “the white” (*to leukon*) picks out the thing that happens to be white or the whiteness (of a thing), the reference is clearly to the thing. Otherwise it would be not only false but nonsensical to say that “the white is black”—i.e. whiteness is blackness—or that “the same item is white and black”—i.e. the same quality is whiteness and blackness.

¹⁰² See also Alexander, *de An.*, 64.16.

¹⁰³ Cf. Alexander, in *Sens.*, 167.25–26.

¹⁰⁴ Cf. Alexander, *de An.*, 64.16.

¹⁰⁵ Alexander, in *Sens.*, 168.1; cf. *Q.* 3.9, 97.34.

Since the components of the composite judgement are judgements themselves, the composite judgement is formed by a *conjunction* of its components.¹⁰⁶

Thus, Alexander's solution for simultaneous perception invokes judgements having propositional content with such complexity. Hence (11*) "there is no opposition in a judgement of opposites."

It also becomes clear from this how perceptual discrimination and perceiving physical objects differ from, yet depend on, simultaneous perception. These acts can be understood as further judgements in addition to the judgement of simultaneous perception. In perceptual discrimination the difference of the objects is judged by means of the difference of the items in the content (in "x is F and y is G," x differs from y; and F from G) and that "F differs from G" is an additional judgement to simultaneous perception. Similarly, in perceiving one object, the sameness is judged by means of the sameness of some item in the content: the sameness of the subject (if x = y, i.e. "x is F and x is G"),¹⁰⁷ and the judgement that "it is one thing" is additional to simultaneous perception. Hence simultaneous perception is a more basic phenomenon than either discrimination or perceiving one physical thing. All the arguments suggest that simultaneous perception is the unity of consciousness in which all perceptual judgements are conjoined.¹⁰⁸

6.5.2 *Material Change and Judgement*

Even though Alexander asserts that (10*) "perception is judgement," he also maintains that (10#) "*perception is by means of movement*." It seems that he rejects any attempt to solve the Problem of Opposites by eliminating all physical change.¹⁰⁹ He

¹⁰⁶ A similar suggestion is made by Beare 1906: 281.

¹⁰⁷ E.g. bile is perceived to be both bitter and yellow, cf. Aristotle, *de An.* 3.1, 425a30–b3. On this see Kahn 1966: 54; Hamlyn 1968b: 199–200; Marmodoro 2014: 166–67.

¹⁰⁸ Emilsson (1988: 94–100) explicitly identifies it thus, and emphasizes the Stoic influence on the unity of consciousness in the ruling part of the soul (*hēgemonikon*). Cf. Hamlyn 1968a: 128; 1968b: 199; Charlton 1981; Modrak 1981a; Shields 2016: 272–73.

¹⁰⁹ At *de An.*, 61.30–63.5 Alexander plays with the idea. And even though he does not explicitly reject it, at the end he offers remarks that tell against it (*de An.*, 62.22–63.5)—namely, the case of the sense-organ and the medium are disanalogous: affections remain in the former, but do not remain in the latter—in line with everything he says elsewhere, e.g. *de An.*, 39.10–18; in *Sens.*, 5.19–8.13. The role of this suggestion in the argumentation is by no means clear, however: cf. Bergeron and Dufour 2008: 42, 308–9; Accattino and Donini 1996: 228–30; Emilsson 1988: 99.

Gregoric (2017: 56–62) also takes the remarks at *de An.*, 62.22–63.5 as supporting the thesis that perception requires no material change, but is a different kind of change. He argues, then, that this "immateriality" thesis is the first step towards the solution, leaving for the point analogy to decide if the special senses or the common sense do simultaneous perception and perceptual discrimination. Against this interpretation the following can be considered. First, this obscures why the Problem of Opposites still arises, and why there is need for separate parts of the sense-organs for receiving incompatible affections (cf. note 86). Again, later (59–60) Gregoric confuses this immateriality thesis with the thesis that the common sense as a form is immaterial—which

has strong reasons to do so: e.g. a causal connection to the object is necessary to trigger the activity of the capacity; moreover, the fact that the affection is assimilation to the object explains the intentional (and phenomenal) content of the perception. In addition, it would be anachronistic to suppose that perception does not involve material change at all.¹¹⁰

For this reason, Alexander has to provide a satisfactory explanation of how the material change (the movement) is related to the perceptual activity of judging. In particular, he has to offer an account of the role of material alteration in simultaneous perception of opposites (as well as of heterogeneous perceptibles).

In his commentary he just summarizes the findings that are explicated in detail both in *Questiones* 3.9, and in *De anima*.¹¹¹ Thus, in this section, I appeal to the parallel passages to complete the account of simultaneous perception provided in the commentary.

However when that body is affected in which this <i.e. the perceptive> soul <is located>, and which it is habitual to call the ultimate sense-organ, <it is affected> not in respect of the same part by both <opposites> but rather <the affections> are generated in different <parts> by different <opposites> just as we see in case of the eyes and mirrors when the opposites appear simultaneously.¹¹²

The problematic proposition was that (12) “*the same thing cannot admit two incompatible (in particular: opposite) affections at the same time.*” This involves three factors: the subject, the affection, and the time. Two of these cannot be altered. First, we are considering the possibility that the affection involved in perception is affection in the strict sense. Again, since what has to be shown is the possibility of simultaneous perception, simultaneity cannot be dropped either. The remaining factor is the subject. Hence, instead of a single subject there must be different subjects for the incompatible affections.

We learn elsewhere that the affection involved in perception is *assimilation* to the perceived object.¹¹³ This is a consequence of the Aristotelian theory of causation.¹¹⁴ For, if *a* acts upon *b* (in virtue of *F*), then before the process *a* and *b* were dissimilar (*F* and non-*F*), and in the change *a* assimilates *b* to itself, by making *b* actually

Alexander clearly endorses, but which does not follow from the immateriality thesis concerning the perceptual change. Moreover, Alexander does not appeal to the thesis that perception is a different kind of change; rather, he puts forward the thesis that perception is a *different type of activity*: judging.

¹¹⁰ Nevertheless it has been supposed for Aristotle: Burnyeat 1995, 2002. But this idea is conclusively rejected, e.g. by Sorabji 1992; Sisko 1996; Everson 1997; Caston 2005; Lorenz 2007.

¹¹¹ Cf. Alexander, *Q.* 3.9, 97.22–25; 98.2–15; *de An.*, 64.4–11; 64.17–65.1.

¹¹² πάσχοντος μέντοι τοῦ σώματος ἐν ᾧ ἦδε ἡ ψυχὴ, ὃ ἔθος ἐστὶ λέγειν ἔσχατον αἰσθητήριον, οὐ κατὰ τὸ αὐτὸ μόριον ὑπ’ ἀμφοῖν, ἀλλὰ κατὰ ἄλλο ὑπ’ ἄλλου γίνεται, ὥς γὰρ ὁρῶμεν καὶ ἐπὶ τῶν ὀφθαλμῶν καὶ ἐπὶ τῶν κατόπτρων ἅμα ἐμφαινόμενα τὰ ἐναντία. (Alexander, *in Sens.*, 168.2–5.)

¹¹³ See Alexander, *de An.*, 38.20–40.3, 40.20–41.10; cf. Aristotle, *de An.* 2.6. Cf. Marmodoro 2014: 80–86.

¹¹⁴ Aristotle, *Ph.* 3.1–3; *GC* 1.7. For a recent analysis of the relevance of the causal theory in Aristotle’s views on perception, see Marmodoro 2014.

F. Perceptual assimilation comes to be through a *qualitative change*, for the special objects of perception are qualities.

Again, since the affection is physical, it requires a body as its subject. Thus it is not the capacity that receives the affection, otherwise the Problem of Opposites would still arise. But the incorporeal capacity is not even a suitable subject for material affection. Hence, the subject has to be the sense-organ.¹¹⁵ But being corporeal implies that it is an extended magnitude, so that it is divisible into several parts.¹¹⁶ Now, since a part of a magnitude is still a magnitude, and a part of a body is still a body, the parts of the sense-organ are suitable subjects for receiving affections. Indeed, Alexander appeals to the observation that different colours affect different parts of the eye as well as appear in different parts of a mirror.¹¹⁷ Hence the proper subject that receives perceptual change is a part of the sense-organ.¹¹⁸ So, assimilation takes place in parts of the primary sense-organ. It comes to be there by being transmitted there from the different peripheral sense-organs.¹¹⁹

This explains why the respect in which the one capacity is many may have been cashed out in different terms (see §6.4.3). Since all these items—the transmission-process itself, the route of transmission, the affection as the product of transmission, and the part of the primary organ as the end-location of transmission—are phases of and items in a single process (the transmission), the claims that the one capacity becomes several in accordance with “the transmissions,” “the activities in respect of the sense-organs” (i.e. the transmission-processes themselves), “the lines” (corresponding to the routes), “the affections,” and “the parts of the organ” are all equivalent. The last of these—the parts—is the most proper item according to which the distinction can be made. For the parts of the sense-organ might differ irrespective of the kind of affection and the corresponding kind of perceptible features involved—heterogeneous or homogeneous perceptibles in the same way (requirement (vi) in §6.2).

Now, since the affections are related to (present in) different parts of the sense-organ, no impossibility arises from the fact that the sense-organ is being affected by opposites simultaneously. However, that the affections are of diverse subjects seems to contradict the requirement of a single subject.¹²⁰ Even though the subject of the

¹¹⁵Alexander, *Q.* 3.9, 97.35–98.4. In the passage where Alexander introduces the issue of perceptual change, he carelessly writes as if its subject were the capacity rather than the body, see especially Alexander, *de An.*, 39.11–13, 16–18. This attribution can be dismissed, however, as introductory, especially because it is followed by an explicit statement that the subject is the body (*de An.*, 39.18–21). Cf. Corcilius 2014: 43–48. However, see Lorenz 2007.

¹¹⁶Alexander, *Q.* 3.9, 96.31–97.8.

¹¹⁷Alexander, *in Sens.*, 168.3–5; *Q.* 3.9, 97.1–4.

¹¹⁸Alexander, *in Sens.*, 168.3–4; cf. *de An.* 64.4–9, 18–19; *Q.* 3.9, 97.5–8, 22–25, 98.4–6.

¹¹⁹Alexander, *de An.*, 64.2–3, 7–8, 19–20; *Q.* 3.9, 97.22–25.

¹²⁰Cf. Emilsson 1988: 104–5. Emilsson argues that: “Plotinus’ view of the matter is much simpler [than that of Alexander]. Basically all he does is to develop one of Alexander’s two solutions so that a uniform account can be given in terms of it.” This solution is what I explicate below: that the soul as incorporeal is uniformly present to the body. The achievement of Plotinus that Emilsson

perceptual activity is claimed to be the capacity, it must be explained how it is the case that there is only one single capacity if there are several parts of the sense-organ that each may receive different affections simultaneously. How might there be one activity of this capacity, which is related to several parts of the sense-organ?

This capacity senses and judges the things that come about in that body, of which it is the form and capacity, according to the transmission from the sense-organs. For this capacity is single and, as it were, the terminus of this body of which it is the capacity, since it is to this that the changes are transmitted as their ultimate [destination]. [The capacity,] being *incorporeal* and *indivisible* and *similar in every way*, as being single, in a way becomes many [capacities], since it senses *similarly* the changes in each part of the body of which it is the capacity, whether the change comes about in it in some one part or in several. For in the judgement of several [parts] the single [capacity] in a way becomes several capacities, since it is taken as the proper terminus of each part.¹²¹

What Alexander offers is insisting on *hylomorphism*. Accordingly, as the sense-organ is the matter of the perceiver, the capacity of perception—which makes the judgement—is the form.¹²² Just as with any form, the perceptive capacity enforms the sense-organ throughout *uniformly*. That is, it is the same form in relation to the *whole* sense-organ as well as to *all its parts*. Thus, there is one single form, and it is incorporeal, and similar throughout.¹²³ In a sense the perceptual movements are taken to it, “for the transmission from the perceptible objects through the sense-organs extends to it and is towards it.”¹²⁴ For the capacity is the last item concerned with the movements in making the judgement by means of them, hence, in a sense, it is the limit of the sense-organ. The capacity might be called a limit of the body insofar as it might be called the limit of the bodily movements in the diverse parts of the organ, or the limit of the parts themselves.¹²⁵ Certainly it is not a physical limit in virtue of being the end-location of the transmission of the movements. Rather, being incorporeal (not a magnitude), hence also indivisible, it might be a limit by analogy. The capacity is the limit of the movements, insofar as when the

refers to is his disregarding of the transmission from sense-organs to a central organ as unnecessary addition. Cf. Henry 1957.

¹²¹ ἴσως δ' ἂν ἐφαρμόξειν δύναιτο μᾶλλον τῇ δυνάμει τῇ τοῦ σώματος ἐκείνου, ὃ λέγομεν ἔσχατον αἰσθητήριον, οὗ ἡ αἰσθητική δύναμις εἶδος, ἣτις δύναμις αἰσθάνεται καὶ κρίνει τὰ ἐν τῷ σώματι, οὗ δύναμις καὶ εἶδος ἐστὶν γενόμενα κατὰ τὴν ἀπὸ τῶν αἰσθητηρίων διάδοσιν. ἡ γὰρ δύναμις αὕτη μία οὕσα καὶ ὥσπερ πέρας τοῦ σώματος τούτου οὗ δύναμις ἐστίν, ἐπειδὴ ἐπὶ τοῦτο τὸ ἔσχατον αἰ κινήσεις φέρονται, ἀσώματός τε οὕσα καὶ ἀδιαίρετος καὶ ὁμοία πάντη, μία οὕσα, πολλάι πως γίνονται τῷ τῶν καθ' ἕκαστον μόριον τοῦ σώματος, οὗ δύναμις ἐστὶ, κινήσεων αἰσθάνεσθαι ὁμοίως, ἂν τε κατὰ ἓν τι μόριον ἡ κίνησις ἐν αὐτῷ γένηται, ἂν τε κατὰ πλείω. ἐν γὰρ τῇ τῶν πλείονων κρίσει πολλάι πως δυνάμεις ἢ μία γίνεται ὡς ἐκάστου μορίου πέρας οἰκεῖον λαμβανομένη. (Alexander, *Q.* 3.9, 97.10–19.)

¹²² Alexander, *Q.* 3.9, 97.9–10.

¹²³ Alexander, *de An.*, 63.17–19, 64.9–11; *Q.* 3.9, 97.14–15, 98.6.

¹²⁴ Alexander, *de An.*, 63.15–16; see §6.4.3.

¹²⁵ Alexander, *Q.* 3.9, 97.13–14, 18–19; *de An.*, 63.14–17.

capacity makes judgements based on the movements the movements terminate in the judgement.¹²⁶

Again, being the form in the same way of each part of the sense-organ, the capacity can judge the affections in each part *in the same way*.¹²⁷ This is a crucial point for two reasons. First, this allows that only one activity may be there to judge several things (requirement (iii) in §6.2), by being related to each part of the primary sense-organ uniformly, i.e. picking up on the affections in the parts and judging that corresponding to the affection there is a quality in the environment. The same relation allows that each perceived feature comes into the perceptual content as a predicate of its given subject. Second—and most importantly—the uniform relation allows that the objects are perceived distinctly, without any interference, hence as they are (requirement (i) in §6.2). For in case several things are perceived, since the affections are in diverse parts, they do not need to affect each other, hence they may remain affections as they would be if only a single thing were perceived. The lack of interference also allows the objects to be perceived as two (requirement (ii) in §6.2).

This implies that there are as many objects in the perceptual content, since many affections are co-occurring in the several parts of the primary sense-organ. When there is only one affection, what is perceived is only one thing. When there are many affections, all of them will be perceived at the same time. And in this latter case the one capacity *as it were* becomes several.¹²⁸

6.5.3 The Solution for the Point Analogy

Now that we have seen the elements of the solution, let us see how it applies for the analogies. The solution that (10*) “perception is judgement” seems to be applicable to both the Apple Analogy and the Point Analogy similarly. It certainly applies to the Point Analogy. As we have seen (§6.4.3), the account of the Point Analogy describes the point in the same terms as we have just seen for the capacity: *single, incorporeal, indivisible*. Moreover, the connection is also made in terms of the uniformity of relation. For just as the point is “insofar as what is from them all [the lines] is one undifferentiated and in *every way the same*,”¹²⁹ the capacity as well is the “limit of all the sense-organs *in the same way*.”¹³⁰ There is not only no spatial differentiation in the point and the capacity, but they are also related to the different items with the same kind of relation. The point is the limit of the lines in the same sense, and the capacity is present to its parts, is judging the affections in the parts,

¹²⁶ Alexander, *Q.* 3.9, 97.14, 17–18.

¹²⁷ Alexander, *Q.* 3.9, 97.15–17; *de An.*, 63.20–28.

¹²⁸ Alexander, *Q.* 3.9, 97.17–18, 98.8–15; *de An.*, 64.20–65.1.

¹²⁹ καθόσον δὲ ἐν τὸ ἐκ πάντων ἐστὶν ἀδιάφορον καὶ πάντῃ τὸ αὐτό. (Alexander, *Q.* 3.9, 96.26.)

¹³⁰ πάντων γὰρ τῶν αἰσθητηρίων ὁμοίως ὃν πέρας. (Alexander, *in Sens.*, 165.13.)

and is presented with the affections in the parts through the affections having been transmitted, etc., in the same way.

It is clear that if the unity is given on the level of capacity, there has to be something on a different level that accounts for the required plurality. In the point analogy: the point is one, and there are several lines. The lines and the point are on different levels, for the lines are one-dimensional items whereas the point is zero-dimensional. Since the capacity is on the level of form, the only possible subject remaining, then, is something bodily.¹³¹ Plurality is indeed accounted for by the several parts of the primary sense-organ. Hence, the analogy with the point requires that there are several bodily items (parts of the sense-organ) involved in the solution as subjects for the diverse perceptual affections: viz. (10*) is necessarily supplemented with (10#).

6.5.4 The Solution for the Apple Analogy

Again, the fact that (10*) “perception is judgement” is introduced, at *in Sens.*, 167.21, in the context of the Apple Analogy¹³² suggests that it fits this analogy too. In the Apple Analogy there is *one body* underlying the affections on the one hand, and *many capacities* perceiving them on the other. However, both these aspects of the analogy strongly tell against the applicability of the solution (10*) for it. First, (10*) involves one act of judging, although with complex content. But according to (8), one act requires one capacity being active. The many capacities in the Apple Analogy conflict with this requirement. Again, as we have seen (§6.5.2), the solution (10*) involves that the body in which the affections are present has many parts; and these different parts can be unified precisely because one capacity is their form. So whereas the Apple Analogy involves unity of body and multiplicity of capacities, (10*) involves multiple bodily parts unified by one single capacity.

More generally, the purpose of (10*) is to reconcile that (10#) “perception involves material changes” with (11) “material changes of opposites are opposed,” so that one single subject can perceive opposites together without one single body being affected with opposite motions (which is impossible (12)). But if the solution that (10*) “perception is judgement” is combined with an analogy that insists on the singularity of the body involved, then even though (11*) “judgement of opposites does not involve opposition,” the opposite movements involved by (10) and (11) will affect this one single body, contrary to the fact that (12) this is impossible. But if it is dropped that there is only one body, the analogy with the apple is just ruined.¹³³

¹³¹ Pace Gregoric 2007: 132. Cf. Gregoric 2017.

¹³² It is a second alternative to the interpretation according to which the Apple Analogy rules out simultaneous perception of opposites, see Alexander, *in Sens.*, 167.10–21.

¹³³ This problem is the same as that with the Point as Organ interpretation, i.e. the point in the Point Analogy corresponds to the primary sense-organ, to a body, as it is discussed by Alexander in *Q.* 3.9, 96.31–97.8.

6.6 The Adequacy of Alexander's Account

Let us see whether Alexander's solution reconstructed in §§6.5.2 and 6.5.3 answers the issue adequately, especially in relation to the requirements identified in §6.2.

- (i) *The two items that are perceived simultaneously must be perceived distinctly in the same way.* This is clearly met both on the level of the content of the perceptual judgement and that of the material change. First, since the perceptible features enter into the content (x is F and y is G) as predicates (F , G), the two features come into the one judgement in the same way *as predicates* and as distinct, for they are predicates *of different subjects* (though the subjects might be identical: if $x = y$). Again, the perceived objects produce perceptual affections in the primary sense-organ in the same way and distinctly. For the affections come to be *in distinct parts* of the organ, but similarly, insofar as they are *assimilations* to the objects perceived by means of alteration through transmission.
- (ii) *The two items must be perceived as two.* Since the content is a complex of two simple perceptual propositions: " x is F " and " y is G ," the two objects are perceived as two: x , and y as well as F and G . The fact that the corresponding affections are in distinct parts of the sense-organ prevents their interference.
- (iii) *There has to be a single activity of simultaneous perceiving.* There is one activity: judging that " x is F and y is G ." This can be a single activity, for the difference between a judgement with a simple content (x is F) and one with a complex content (x is F and y is G) is not that the former involves one activity and the latter two, but that the latter involves a more complex activity than the former. It is more complex, for it involves also the conjoining of two simple propositions. But it is still one activity, for it is a judgement with a single truth-condition (even though this depends on the truth conditions of the component simple judgements). Again, judging relates to the objects and to the corresponding parts of the sense-organ uniformly, for there is a single form (i.e. capacity) informing the organ, which thereby has a single activity.
- (iv) *The single activity must be at one time indivisible in any respect.* The main desideratum having been simultaneity, this requirement has never slipped notice. However, one might ask how the several components of a judgement (" w is white" and " b is black") might be simultaneous, if judgement is like *saying* or *pronouncing*. For the saying of the terms, and even more, the saying of the component judgements, involves temporal distinctions: since in the judgement " w is white and b is black" the component " w is white" is pronounced before " b is black," hence not simultaneously, so they cannot be judged simultaneously either. But this objection is based on confusing the role of *saying* in the account. What it serves to illuminate is merely the *type of content*—i.e. propositional content—not that it is a process having some

duration.¹³⁴ The simultaneity of the component judgements is best seen in the image in the final account. The judgement of simultaneous perception involves two contemporaneous affections in two parts of the primary sense-organ, hence two contemporaneous relations between the judging capacity and the affections. Since the judgement consists in the relations the capacity has to the several affections, if these affections are simultaneous, the judgement will be simultaneous too. The account does not mention any pronouncing.

- (v) *There has to be one capacity which is perceptive of all kinds of object.* The Point Analogy explicitly fits this, emphasizing the uniqueness of the capacity as the form of the primary sense-organ—the perceptive part of the soul or the common sense—and that this capacity uses the peripheral sense-organs in its activities. Since the capacity is related to each part of the central organ, hence to all transmitted affections in those parts, it is able to perceive all kinds of perceptibles. As we have seen, the Apple Analogy is defeated on this point, as it involves several capacities.
- (vi) *There has to be a homologous account for heterogeneous and for homogeneous perceptibles.* This is also clear in the final account. For what matters is that the perceptual changes affect different parts of the sense-organ, so that they are perceptible simultaneously without causing any physical inconsistency—the formal inconsistency having been resolved by (10*) the judgement-account. Thus, even though only the affections from heterogeneous perceptibles are transmitted through specifically different routes (through different sense-organs), the end-result is similar: different parts of the primary sense-organ are affected by different perceptibles, regardless of how the objects may differ.

6.7 Conclusion

Alexander provided an adequate solution for the problem of simultaneous perception, which can be identified as an important psychological notion: the unity of (perceptual) consciousness. The problem is already set out, but never resolved by Aristotle. Aristotle merely provided some analogies to show the possibility of an account. Alexander solves the problem by extending Aristotle's analogy with a point (depicting a circle with its centre, see §6.4.3) and connecting all of Aristotle's remarks about the issue in different works; thereby remaining a faithful Aristotelian. Alexander's interpretation of Aristotle gains plausibility from the plausibility of his solution for the problem of simultaneous perception. Even in cases when Alexander apparently supplies additional elements to the account—perception as judgement (§6.5.1); assimilation in different parts of the sense-organ (§6.5.2)—we may find the roots in Aristotle, and there is nothing written by Aristotle that contradicts

¹³⁴Rodier (1900: 388) notes that judging is an activity (*energeia*) rather than a movement (*kinēsis*), hence occurs instantaneously and does not have a coming to be.

Alexander's account. Thus, Alexander's treatment of simultaneous perception can be taken as a coherent and powerful interpretation of Aristotle; though the final assessment would require the examination of the consequences of Alexander's solution, and a thorough comparison of them with Aristotle's theory.

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Chapter 7

Common Sense in Themistius and Its Reception in the pseudo-Philoponus and Avicenna



Elisa Coda

Abstract In his paraphrase of the *De anima* Themistius provides an account of Aristotle's doctrine of common sense that combines Alexander of Aphrodisias and Plotinus. The Aristotelian *koine aisthesis* is interpreted as the unifying power of an incorporeal pneuma that receives the information from the senses, the messengers of the soul. On the basis of this Plotinian tenet, Themistius describes the *koine aisthesis* as a spiritual power that unifies diverse and even opposite sensorial inputs, and discriminates between them. This interpretation of *koine aisthesis* was influential in subsequent Greek works on the *De anima* from late Antiquity (pseudo-Philoponus) to Byzantine times (Sophonias) and inspired Avicenna.

7.1 Introduction

It is generally agreed that common sense is a challenging concept in Aristotle's account of perception, due to the diversity of the functions ascribed to it: the grasp of the common sensibles, the awareness of perception, the unification of the peripheral sense-perceptions, and the discrimination of the various elements in one single complex sense object. As such, it has been examined time and again by modern

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commentators, who pointed to his account(s) in the *De anima* as well as in other psychological treatises such as the *De memoria*, the *De sensu et sensato* and the *De somno*.¹

Also in the medieval reception of Aristotle's psychological doctrines, especially from Avicenna onwards, the common sense has a prominent role. As Simo Knuuttila has it, "the dominant medieval theory of perception was Aristotle's account of perceptual powers, which was first discussed as part of Avicenna's psychology and then in commentaries on Aristotle's *De anima* and other psychological treatises. There were some variations in interpreting Aristotle, as well as critical approaches with a Neoplatonic slant the history of which in medieval discussions of perception has not been systematically studied."² As a contribution to the all-embracing study called for by Knuuttila, this paper deals with Themistius' account of the internal senses, with special emphasis on his way to understand the common sense. After having discussed the way in which Themistius deals with Aristotle's presentation of this power of the soul, and the sources of his idiosyncratic development, I will focus on the reception of the Themistian account, both in Greek philosophy (late Antique and Byzantine) and in Avicenna.

7.2 Themistius on the Common Sense

While it is uncontroversial that for Aristotle the actualisation of the human capacity for thinking depends upon previous actualisation of the capacity for perceiving,³ the issue of the common sense, the most natural link between sense-perception and thinking, is less uncontroversial. Some scholars maintain that Aristotle has indeed a unified theory of the perceptual powers, while others raise doubts on its overall consistency.⁴

Even without discussing common sense and its problems in Aristotle, a short account of its role in cognition is in order here. Within the process that leads from the sense organs to the rational faculty, a special task is performed by a power of the soul, the 'common sense': Aristotle claims that the special senses are unified at the perceptive level, and it is generally agreed in scholarship that this faculty of the soul

¹Cf. Modrak 1981, 1987: 62–80; Gregorić 2007.

²Knuuttila 2008: 15 and 17. The issue of internal senses in medieval philosophy has been raised by Wolfson 1935. Other studies include Dewan 1980, Black 2000, Di Martino 2008.

³In *de An.* 3.8, 432a7–8 Aristotle states that "as without sensation a man would not learn or understand anything, so at the very time when he is actually thinking he must have an image before him" (trans. Hicks, 145).

⁴Modrak (1987) argues for a unified theory and a variety of accounts, Gregorić (2007) is much more nuanced.

is unspecialised perception that adapts itself to the common qualities of the object perceived.⁵

Ensouled beings regularly and effortlessly perform a number of perceptual activities that cannot be explained by the five senses taken individually: for instance, perceiving that one and the same object is white and sweet, noticing the difference between white and sweet, or being aware that one of our own senses is performing its own task. In *De anima* 3.1 Aristotle mentions the common sense (τῶν δὲ κοινῶν ἤδη ἔχομεν αἴσθησιν κοινήν, οὐ κατὰ συμβεβηκός, 425a27–28) and proceeds to explain such operations with reference to a higher-order perceptual faculty, which unifies the senses when more than one of them is at work. He provides only few references to this faculty, named κοινή αἴσθησις in this passage of the *De anima* and in a few other ones, but bearing other names elsewhere.⁶ Hence, the nature and functions of this higher-order faculty have been a matter of discussion from Antiquity to the Middle Ages.⁷

In his paraphrase of Aristotle's *De anima*, Themistius (c. 317–389 CE) presents a detailed explanation of κοινή αἴσθησις and its functions. Themistius was a prominent personality of the Imperial court of Constantinople. He became a high dignitary of the Eastern Roman Empire, managing to reconcile his life-long paganism with the dominant Christian stance of the court.⁸ Between 345 and 355 he had taught in the philosophical school of Nicomedia,⁹ to move later on to Constantinople, where he engaged in a special kind of *paideia*¹⁰ that directly addressed the elite. His strategy for teaching philosophy to an audience of this kind was explicit: he consciously set for himself the goal of presenting Aristotle's doctrines in a simplified

⁵Cf. *de An.* 2.5, 418a10–20; 3.3, 428b22–23; *Sens.* 4, 442b4–10. According to Modrak (1987: 62 and 65), the diverse functions of the common sense include “the perception of the common sensibles, the reflexive awareness of perception, judgments about the unity of complex sense objects, and the discrimination of differences among proper objects. [...] The common sense is not a separate sense; it just is the capacity for the joint exercise of several senses.” Gregorić (2007: 206) defines the common sense as that “higher-order perceptual power” that emerges “from the unity of the perceptual capacity of the soul”; its functions are identified as follows: “(1) simultaneous perception, (2) perceptual discrimination, (3) control of the senses, and (4) monitoring of the senses” (ibid., 207). The ‘common sensibles’ mentioned by Modrak (referring to *de An.* 2.6, 418a17–20) and alluded to in points (1) and (2) of Gregorić’ account are those features of an object perceived that are not the proper object of any single sense: in the passage just alluded to Aristotle lists motion, rest, number, figure, and size.

⁶In addition to *de An.* 3.1, 425a27 (τῶν δὲ κοινῶν ἤδη ἔχομεν αἴσθησιν κοινήν), this power is called κοινή αἴσθησις also in *PA* 4.10, 686a30–32 (τὸ γὰρ βάρος δυσκίνητον ποιεῖ τὴν διάνοιαν καὶ τὴν κοινήν αἴσθησιν) and in the *Mem* 1, 450a10–11 (καὶ τὸ φάντασμα τῆς κοινῆς αἰσθήσεως πάθος ἐστίν), while in the *Somn. Vig.* 2, 455a16 it is called κοινή δύναμις.

⁷See above nn. 1 and 5.

⁸Themistius was appointed senator in 355, proconsul in 358, and prefect of Constantinople under Theodosius I, in whose court he was also appointed teacher of the Emperor's son and successor Arcadius.

⁹Them., *Oration* 31, and *Oration* 24, 302 C–303 A.

¹⁰Colpi 1987.

manner,¹¹ thus providing a successful model for the subsequent enculturation of Greek philosophy in other linguistic areas and religious landscapes.

Themistius' paraphrases provide general assessments of Aristotle's doctrines without delving into those details that are instead discussed at length in lemmatised commentaries such as Alexander of Aphrodisias'. In rephrasing Aristotle, Themistius expands, sums up, and occasionally even rearranges the order of Aristotle's argumentations.¹² His paraphrases offer a more accessible approach to Aristotle that was destined to become widespread among pagan, Christian, Muslim, and Jewish authors,¹³ not to mention the learned men of the Italian Renaissance.¹⁴ In the case of the *De anima*, his paraphrase has attracted much attention also in modern times: Latin medievalists and the Arabists have devoted several studies to Themistius' interpretation of the Aristotelian doctrine of the intellect and its implications for the issue of the soul's immortality. First G. Verbeke,¹⁵ then H. Gätje,¹⁶ Sh. Pines,¹⁷ R. Todd¹⁸ and others paid attention to Themistius' 'noetics', highlighting its influence in the Islamic philosophical tradition, in the Latin Middle Ages, and in the Renaissance.¹⁹

¹¹ Them., *In An. Post.*, 1.2–2.4 (ed. Wallies), where he refers to his works as to “explications (*exēgēseis*)” of Aristotle's books.

¹² Them., *In de An.*, 1.1–5 (ed. Heinze). Simplicius, *In Cat.*, 1.9–10 (ed. Kalbfleisch), says that Themistius' goal in his paraphrase of the *Categories* was to “make the actual wording (*lexis*) itself more clear” (trans. Chase, 17). Todd (1996: 2–4) translates the passages of Themistius' proem to his paraphrase of the *Posterior Analytics*, where he accounts for his method of paraphrasing, and outlines the application of this method to the *De anima* as the “restatement, enlargement and rearrangement of texts, with some omissions of repetitive material, and the explication of terminology by glosses or substitutions” (ibid., 4). The same passage from the paraphrase of the *Posterior Analytics* is discussed by Kupreeva (2012: 399–400), who remarks that “occasionally, Themistius makes an excursus from paraphrasing to state his position or discuss a more controversial question. These digressions are most important for reconstructing his philosophical views” (ibid., 400).

¹³ On the fortune of Themistius' paraphrases in the Middle Ages cf. Coda 2011; Schamp et al. (2016), in particular 875–83.

¹⁴ Ermoalo Barbaro (Jr.), Paolo Orsatto, Ludovico Nogarola, Federico Pendasio, Federico Bonaventura, Marcantonio Zimara, Moses Alatino, Moses Finzi, and Francesco Patrizi da Cherso: see Todd 2003; Coda 2016.

¹⁵ In his introductory essay to the critical edition of the Latin translation of Themistius' paraphrase (Themistius 1957), Verbeke discusses earlier scholarship on Thomas Aquinas' use of Themistius. See also Coda 2017.

¹⁶ Gätje 1971.

¹⁷ Some passages of Themistius' paraphrase of Aristotle's *De anima* are taken into consideration by Pines 1987, a study that is devoted to the paraphrase of *Metaph. Lambda*; recent and enlightening studies on the influence of Themistius' paraphrase on Avicenna and Averroes include Taylor 2013.

¹⁸ Todd 1996: in particular 1–12.

¹⁹ The Italian Humanists show a prominent interest in Themistius' paraphrase of the *De anima*. A Latin translation was produced by Ermolao Barbaro (Jr.) between 1471 and 1480 and published in 1481. This translation was reworked by the same translator in 1492 and repeatedly published with his translations of other Themistian paraphrases (*In An. Post.* and *In Phys.*). Another annotated Latin translation of Chapter 3 was produced by Ludovico Nogarola around 1554. Finally, there are various versions of the translation by Federico Bonaventura, produced between 1582 and 1588: see

Themistius' paraphrase of Aristotle's *De anima* is the earliest exegesis of this work that has come down to us, if we have to take literally the term 'exegesis'.²⁰ It is true that Themistius was preceded by Alexander of Aphrodisias (fl. c. 200 CE), but the latter's commentary is lost,²¹ albeit in all likelihood reflected in Alexander's own *De anima*,²² the aim of which was to expressly present Aristotle's doctrine on the soul, but which does not follow the order of exposition of the Aristotelian treatise, to say the least.²³ Themistius was well acquainted with Alexander's interpretations,²⁴ even though a complete inventory of his quotations from the latter's works has not yet been compiled.²⁵ The same is true for Plotinus (c. 205–269 CE), who discusses at length virtually all the aspects of Aristotle's psychology. The point is relevant because there are hints that Themistius was a careful reader of Plotinus on the issue of the soul.²⁶ Thus, the Themistian paraphrase of the

Todd 2003: 78–86. The paraphrase has been translated into Italian by De Falco (Themistius 1965) and into English by Todd (Themistius 1996).

²⁰The *editio princeps* of the Greek text by Vittore Trincavelli (1491–1593) was published in Venice by the heirs of Aldo Manuzio in 1534. The paraphrase covers the three books of Aristotle's *De anima*. In the preface of his edition (Themistius 1899: vi), Heinze says that in the oldest manuscripts the paraphrase is subdivided into seven "discussions" (*logoi*), a subdivision that is echoed in the Arabic version (see below, note 61). This division is due to Themistius himself, as shown by Heinze on the basis of the expressions adopted to mark the end or beginning of the discourse, e.g. at 38.35 (third *logos*), and 98.9 Heinze (fifth *logos*). On the contrary, Todd (1996: 1, and nn. 2–3), contends that this division was the work of an unknown Byzantine scholar.

²¹Themistius' knowledge of this commentary is questioned: see Todd 1996: 156 n. 27 and 174 n. 14 with bibliographical references. See also Sharples 1987: 1202–14. On Alexander's works on psychology see Donini 1994: 5045–56; Caston 2012; and Accattino 2014.

²²Alexander's own *De anima* is edited by Bruns (1887); English trans. by Fotinis (1979). Recent translations with detailed commentaries include Accattino and Donini (1996) and Bergeron and Dufour (2008). Caston (2012) offers an outline of Alexander's *De anima* pointing to its differences with respect to Aristotle's treatise.

²³Though Alexander follows in broad strokes the plan of Books 1 and 2 of Aristotle's *De anima*, his own treatise that bears the same title is quite different in structure and aims. Suffice it to read its first sentences to have a sense of the difference between Alexander's and Aristotle's *De anima*: "It is our intention to treat of soul, and specifically of that soul which is involved with a body subject to generation and corruption. We shall inquire into its essence and its powers: what and how many these are, and how they differ among themselves. Now it is fitting that at the outset of any enterprise we be mindful of prescriptions laid down by the gods; and we are all familiar with the ancient mandate, proclaimed by the Pythian oracle: Know thyself! This we should interpret not only as the command of a god, but of that god who is rightly believed to have foreknowledge of the future. Here he announces, with prophetic insight, that it is self-knowledge which will enable us to lead our lives according to the dictates of nature. Such knowledge of oneself consists, moreover, in our comprehending that principle whereby each of us is truly himself; and man is man in virtue of his soul." (1.1–2.2 Bruns, trans. Fotinis, iv.)

²⁴Todd 1996: 1, n. 5. On the reception of Alexander's psychological works by later authors cf. Goulet and Aouad 1989: 134.

²⁵For a first orientation cf. Coda forthcoming.

²⁶Scholars have debated about Themistius' philosophical allegiance, in particular his Aristotelianism vs Neoplatonism. For a balanced assessment of the debate see Kupreeva 2012: 405–6. Hadot (2015: 75) lists Themistius among Neoplatonists; on the contrary, Sorabji (2016: 20) maintains

De anima appears from the outset as the ideal place to find the first confluence of the Peripatetic and Neoplatonic readings of Aristotle's *De anima*. In what follows I will try to show that Themistius' treatment of the common sense is a case in point for such a confluence, while in Sect. 7.2 I will discuss the way in which later commentators of the *De anima* were influenced by it. In Sect. 7.3 a passage of Avicenna's own *De anima* will be examined that proves—or so it seems to me—that the Avicennian doctrine of the common sense owes much to Themistius' treatment.

In the paraphrase the question of the common sense is addressed at the beginning of the fifth *logos* (80–98, ed. Heinze),²⁷ corresponding to Aristotle's chapters 1–4 of Book 3 of the *De anima*. First Themistius deals with each one of the special senses, offering successive rephrasings of each of Aristotle's accounts.²⁸ For Themistius as well as for Aristotle, it cannot be the case that there is another sense in addition to the five special ones (cf. *de An.* 3.1, 424b22–24), nor is it possible that we perceive one or another of the common sensibles by means of one of these five special senses, unless one is ready to accept that these common sensibles are perceived accidentally, as when we grasp that something is sweet by seeing it (*de An.* 3.1, 425a20–22). In Chap. 2, Aristotle proceeds to discuss the perception of perception and the perceptive discrimination, explaining that this power is grounded on exactly the fact that one and the same faculty can 'say' that one and the same thing is 'white' and 'sweet': otherwise, it would be as if there were two distinct persons, one of them judging about the white, and the other about the sweet. Since Themistius begins to add his own thoughts to Aristotle's at this point, it is necessary to quote the relevant passages from Aristotle's *De anima*. In fact, here as elsewhere Themistius' idiosyncratic elaboration occurs within a context of general fidelity to the wording of Aristotle.

Nor indeed can we with separate organs judge that sweet is different from white, but both objects must be clearly presented to some single faculty. For, if we could, then the mere fact of my perceiving one thing and your perceiving another would make it clear that the two things were different (οὕτω μὲν γὰρ κἂν εἰ τοῦ μὲν ἐγὼ τοῦ δὲ σὺ αἴσθοιο, δηλον ἂν εἴη ὅτι ἕτερα ἀλλήλων, δεῖ δὲ τὸ ἐν λέγειν ὅτι ἕτερον). But the single faculty is required to pronounce them different, for sweet and white are pronounced to be different. (Aristotle, *de An.* 3.2, 426b17–21, trans. Hicks, 119)

The sentence οὕτω μὲν γὰρ κἂν εἰ τοῦ μὲν ἐγὼ τοῦ δὲ σὺ αἴσθοιο, δηλον ἂν εἴη ὅτι ἕτερα ἀλλήλων, δεῖ δὲ τὸ ἐν λέγειν ὅτι ἕτερον (426b19–21) was impressive enough

that "What Themistius does have in common with the philosophers whom we call Neoplatonists is that he wishes to harmonise Plato and Aristotle wherever possible. But that is not a sufficient condition for being a Neoplatonist: there were harmonisers before Neoplatonism, and Themistius prefers harmony but does not think it is his business to argue for harmony at length. It should be less controversial that Themistius did not agree with Iamblichus' version of Neoplatonism". On Themistius' dependence upon Plotinus on the issue of soul as a substance cf. Coda 2017.

²⁷ See above note 20.

²⁸ Them., *In de An.*, 80–83, ed. Heinze.

to be quoted literally, first by Alexander,²⁹ then by Plotinus,³⁰ then again by Themistius himself.³¹ The point here established by Aristotle—namely that one single power has to discriminate between two different perceptions—predictably gives rise to different developments in Alexander and in Plotinus, but both of them agree that the unity of the power perceiving two qualities grasped by two of the special senses is an incontrovertible truth, and Themistius agrees as well. Within this context, he presents a development that is interesting on various counts. First, it informs us about his sources, and provides a telling example of his method in paraphrasing Aristotle. Second, it contains a detail suggesting that Avicenna was acquainted with exactly this passage, as we shall see below in Sect. 7.3.

Themistius' development is articulated into two distinct steps. First, Themistius remains close to the Aristotelian passage; then, he introduces a long passage that, for the sake of clarity, I will call the "digression." The following two quotations come from the first part, when Themistius still adheres to Aristotle's passage.

It [i.e. the single entity that in grasping two features of one and the same thing distinguishes between them: ἐν ... ὁ ἀφοῦν αἰσθανόμενον οὐ λέγει ἐν ἄμφω, lines 17–18] not only [perceives] the thing as a single thing, but also at a single time. For when it perceives honey as a gold-coloured and sweet, or snow as cold and white, it does not perceive the whiteness at one time and the coldness at another, but [both] at one and the same time. (Themistius, *In de An.*, 85.20–24, ed. Heinze, trans. Todd, modified, 108.)

This passage obviously depends on Aristotle, who deals with simultaneous perception at 426b23–427a1, claiming that the perception of two distinct features of the same object must happen at one and the same time (it is *now* that I perceive that 'sweet' is different from 'white'), and tackles an objection: what will happen if the object has qualities that are not only different, but opposite?³² The examples provided by Aristotle are the pairs of 'sweet' and 'white' for different qualities at 426b21, and of 'sweet' and 'bitter' for opposite qualities at 426b31–427a1. Themistius begins by the Aristotelian 'sweet' and 'white'; then, in building his own argument, he first makes use of the twin example of honey (which is at one and the same time 'gold-colored' and 'sweet') and snow (which is at one and the same time 'cold' and 'white'). Shortly after, discussing the aporia of the opposite qualities, he

²⁹ Alex., *de An.* 60.27–61.1, ed. Bruns: "It is as if you and I had before us an object with two sensible qualities, but you perceived only one of these qualities and I only the other" (trans. Fotinis, 71–72).

³⁰ Plot., *Enn.* IV 7[2]. 6.17–19: "[...] or the two different terminal points will each have a perception of something different, as if I perceived one thing and you another" (trans. Armstrong, IV, 355); for the relationship between this passage and Alexander's cf. D'Ancona (2017: 247–50), with reference to previous scholarship.

³¹ Them. *In de An.*, 85.15–16, ed. Heinze: "For in that case if you and I were to perceive distinct [objects], it would be clear that they are distinct from one another" (trans. Todd, modified, 107).

³² In case the features are opposite, it would seem that the soul experiences contrary affections at one and the same time: the Aristotelian passage is quoted *in extenso* below, n. 35.

has recourse to an example different from Aristotle's: instead of speaking of 'sweet' and 'bitter,' he makes use of the pair 'white' and 'black.'³³

It³⁴ therefore, [states both] at the same time, so that not only is it itself a single thing, but is [so] at a single time too. The capacity for sense-perception, at which different reports from the numerous sense-organs terminate, is, then, a single thing (μία τοίνυν ἐστὶν ἡ δύναμις ἡ αἰσθητική, εἰς ἣν αἱ τῶν πλείονων αἰσθητηρίων τελευτῶσι διαφέρουσαι ἀγγελίαι). — But still this is impossible. For the result will be that something that is the same and undivided has more than one movement at the same time and, worst of all, in undivided time. And why do I [just] say 'more than one'? They may be 'opposite' (426b30) too. — As a matter of fact, it is clear that by means of this single sense, whatever it may be, not only do the eyeball and the tongue report the colour gold and [the taste of] sweetness, but also the eyeball by itself reports white and black, as when we encounter the written page (ὥσπερ ὅταν βιβλίοις ἐντυγχάνωμεν γεγραμμένοις). For there we perceive both white and black at the same time, and they are not only distinct but opposite in addition to being distinct. (Themistius, *In de An.*, 85.28–37, ed. Heinze, trans. Todd slightly modified, 108; dashes added.)

The use of the example of 'white' and 'black' apropos the simultaneous perception of opposite qualities is reminiscent of Alexander, who had embarked on a long argument about the medium of perception, in which he made recourse to 'white' and 'black' in order to prove that sight can perceive opposite qualities at the same instant.

Alexander's argument refers to the remarkably difficult passage of the *De anima* 3.2 mentioned before. Here Aristotle raises the following problem: if it is one and the same faculty that judges about contrary qualities of a sense object, on the assumptions (1) that perceiving means to be acted upon and (2) that the given perception must be simultaneous, this would imply that one and the same faculty is affected by opposite qualities at one and the same time.³⁵ While it is not impossible that a sense object possesses opposite features, like the Ethiopian who is black as for the skin and white as for the eyes, that one and the same faculty is acted upon in

³³ 'White' and 'black' are mentioned by Aristotle at 426a20–22 and 426b8–12, but not as the example of opposite qualities: rather, as the example of an erroneous opinion at 426a20–22 ("On this point the earlier natural philosophers were in error, when they supposed that without seeing there was neither white nor black, and without taste no flavour," trans. Hicks 117), and, at 426b8–12, as the example of the specific object of a special sense ("Now each sense is concerned with its own sensible object, being resident in the organ qua sense organ, and judges the specific differences of its own sensible object. Thus sight pronounces upon white and black, taste upon sweet and bitter, and so with the rest." (Trans. Hicks, 117.)).

³⁴ Namely the sense that distinguishes between white and cold.

³⁵ Aristotle, *de An.* 3.2, 426b24–427a1: "For, as it is one single faculty which pronounces that good and bad are different, so when it judges 'A is different from B' it also judges 'B is different from A' (and in this case the 'when' is not accidental; I mean, accidental in the sense in which I may now say 'such and such things are different' without saying that they are different now). That which judges judges, then, instantaneously and hence as an inseparable unit in an inseparable time. But, again, it is impossible for the same thing, in so far as indivisible and affected in indivisible time, to be moved at the same instant with contrary motions. For, if the object be sweet, it moves sense or thought in such and such a way, but what is bitter moves it in a contrary way, and what is white in a different way." (Trans. Hicks, 119.)

opposite ways is hardly acceptable. Faced with this difficulty, Alexander of Aphrodisias first highlights the difficulty: a single sense power would be moved with movements that are “not only different but even contrary”, and this would happen simultaneously. Then he provides his solution: the medium of perception—in the case of sight, air—is not affected, thus allowing two viewers to perceive at one and the same time visual objects with opposite features.³⁶ In an interesting recent article, Pavel Gregorić labels this the “immateriality thesis”, arguing that for Alexander

³⁶Alexander, *de An.*, 61.14–62.13, ed. Bruns: “But as the agency which declares that sweet and white are distinct must be a single faculty, so its assertion that sweet differs from white must be simultaneous with its assertion that white is not sweet. It must, that is, declare not only that these qualities are different, but that they differ at this moment: here and now, it says that sweet and white are now different. For it makes this judgment in its very act of perceiving [the two qualities]. But if this is true, then this single sense power apprehends different proper sensibles in the same act, and at the same time. It might seem, however, that a single sense power which is a numerical unity could not be moved, in one undivided moment of time, with several movements that are not only different but even contrary, nor be simultaneously conformed to a variety of sensible qualities. But this situation would result if sense-perception is as we have described it, whereas the movements that proceed from contrary sensible qualities are contrary movements. Hence it is difficult to accept the possibility of there being one single sense which discriminates among sensible qualities that are specifically distinct. On this basis, indeed, we can raise a prior objection with regard to the proper sensible object of any of the individual senses. Take the case of colors, the perceptual object of the sense of sight. How is it possible for sight to know the difference between white and black? If sight must perceive these [contraries] at the same instant, and perception itself results from a conformity [of the sense power] to its sensible object, is it not impossible that the same sense should be simultaneously conformed to contrary qualities? If the movement which occurs [in the act of perception] is such that the sense power itself, in its reception of white and black, undergoes some physical change, then we are indeed faced with the impossible consequence that it is simultaneously the subject of contraries. But the difficulty might be resolved on condition that the movement produced in the sense by the sensible objects is of some other kind, and that the sense organs do not take on the physical properties of sensible objects, as if they were purely material receptors. Now it is surely obvious that the sense of sight does not assume the actual qualities [of its sensible object] as if it were matter; for we can observe that sight itself does not become black or white when it perceives these colors. The air [which intervenes between the eye and its object] provides further evidence. When this air is filled with light, it serves as a medium for the sense of sight in its perception of colors; but even though air itself must first be set in motion by these colors [in order to convey motion to the eye], it does not have to become black or white to perform its function. Thus there is nothing to prevent two observers from seeing black and white respectively through the medium of the same air. If, for instance, there were two objects one black and one white, lying directly in front of these two observers, each of them might look at the colored object which is closer to the other viewer than to himself. Even if these two viewers are themselves black and white respectively, and are looking at each other, there is nothing to prevent the air between them from serving at the same time as a medium for their two acts of seeing, since it is not a passive recipient of the motion imparted to it by the two objects, nor is it a material subject on which they act.” (Trans. Fotinis, 72–74.)

Something can perceive and discriminate two contrary sensibles [...] because this does not involve any material change, but a different type of change. [...] [A]ir which is lit does not become white and black when it mediates these colours to the perceivers.³⁷

Even though immateriality is not argued for by Alexander as the key for his solution of the riddle of *De anima* 3.2, Gregorić's analysis gives a sense of the implications of the issue at hand.³⁸

Let us now compare Alexander's account with Themistius'. The latter's procedure of smoothing over the difficulties of Aristotle's passage by endorsing and rephrasing Alexander appears in all its effectiveness.

First of all, it is surely not a coincidence that both Alexander and Themistius have made use of the pair 'black' and 'white,' instead of the Aristotelian pair 'sweet' and 'bitter'. One may venture to say that sight is the sense perception that most readily allows simultaneous perception of opposites thanks to a neutral medium, and that this led Alexander to select the pair 'white' and 'black' instead of the Aristotelian pair 'sweet' and 'bitter,' where the neutral medium would have been less easily identified. Be that as it may, it seems fair to assume that if Themistius mentions 'black' and 'white' to exemplify opposite qualities in this context, it is because Alexander does so. Even more importantly, it is by following Alexander's lead that Themistius solves the aporia in a way that is lacking from Aristotle's passage. Here Aristotle limits himself to raising the problem: sense or thought are moved in opposite ways if the object perceived has opposite qualities. Alexander solves the difficulty arguing that the contrariety is not in the perceiver, but in a medium that is not affected by the opposite qualities of the object seen; the implication is that *a fortiori* the observer is not affected either. The essential features of Alexander's example resurface in Themistius, but with a significant difference. Alexander argues that two opposite colours, black and white, are transmitted to the perceiver by a neutral medium, air; air serves at one and the same time for the perception of 'black,' and for that of 'white.' All this is unnecessary complication in Themistius' eyes: one can do without the supernumerary hypothesis of the two viewers and, in the last resort, one can also dispense of the medium of the air: it will be enough to present the simplifying example of the βιβλία γεγραμμένα in order to have Aristotle solving his own aporia in a persuasive way. It is by no means absurd that one and the same power perceives two opposite qualities simultaneously: this is daily experience, as when we perceive the black of the ink and the white of the line left without writing on the page. Granted, Alexander's passage is much more developed than Themistius' short account of the riddle of *De anima* 3.2; in Themistius' version, the allusion made by Alexander to a non-physical kind of change that

³⁷ Gregorić 2017. I am most grateful to Pavel Gregorić for drawing my attention to this valuable article.

³⁸ In the passage quoted above, n. 36, Alexander alludes to some sort of change in the sense organs that is not physical, and says that the sense organs should not be treated as if they were "purely material receptors" if the riddle has to be solved; however, the immaterial nature of the change is not argued for, and the example of the air exhibited by Alexander to illustrate his point does not support the "immateriality thesis."

should affect the sense organs is left aside, possibly because Alexander does not provide any example of such a change. Indeed, the example of the air unaffected by white or black does not count as an instance of non-physical change: on the contrary, the example points to something neutral that *does not* change. Put otherwise, Alexander's "immateriality thesis" is not substantiated by an example, and the example provided does not support the "immateriality thesis." What Themistius endorses from Alexander's solution of the riddle is the idea underlying in the example of the air, namely that of the simultaneous presence of opposite qualities in a neutral medium that remains unaffected: an idea that does not come from Aristotle's passage, but is suggested by Alexander's elaborate example. The upshot is the downgrade of Aristotle's riddle to a difficulty easily solved on the basis of daily experience. All this is referred to "Aristotle" himself.

This kind of smoothing over the difficulties, in Aristotle's name, is typical of Themistius' paraphrases. As a matter of fact, there is no clear distinction—contrary to what happens in lemmatised commentaries—between the voice of the commentator and that of "Aristotle." What a reader of Themistius' paraphrase with no access to *De anima* 3.2 has before him is an "Aristotle" who combines in one stroke two ideas: (i) the common sense judges about the different or even opposite properties of the sense object, acknowledging that honey is both gold-coloured and sweet, and that the written page is simultaneously black and white; (ii) the sense-organs present to this higher-order power of our soul the modifications imparted on them by the sense object.

If point (i) is inspired by Alexander, point (ii) shows that Alexander is by no means the only source of Themistius' interpretation of the Aristotelian common sense. In addition to the Alexandrian example of the two opposite qualities 'black' and 'white' that, thanks to the neutral medium, do not produce the undesired consequence of a perceptual power acted upon in contrary ways, Themistius has recourse to another idea that does not feature in Aristotle's original passage, and does not feature in Alexander's account either: that of the ἀγγελία of the senses (85.30, "report," in Todd's translation). The senses convey the various properties of the object perceived to the unifying power of the soul. Thus far, there is nothing particularly non-Aristotelian in this account, were it not for the fact that Aristotle does not speak of any ἀγγελία on the part of the senses. But these "reports" reappear in the long digression that I mentioned before, in which it becomes clear that the ἀγγελία of the senses has far-reaching implications, such as to transform the Aristotelian common sense into something really new.

The digression is located at the end of the paraphrase of *De anima* 3.2, and contains Themistius' most extensive discussion of the common sense. Here it is described as a spiritual power of the pneuma, and Themistius assigns to the senses the task of being the messengers (εἰσαγγέλλειν) of sense-perception to it. First Themistius endorses Alexander's adaptation of Aristotle's cryptic comparison of sense

perception with a point dividing a line.³⁹ Then he defines the δύναμις that discriminates the various sense perceptions as a “single entity” operating as the “termination of several organs (πέρας ὁργάνων)”: being one and undivided, it is also the termination point of various and different perceptions, something that elicits the solution of the riddle about contrary qualities affecting simultaneously one and the same recipient.⁴⁰

Instead, while each sense-organ reports (εἰσαγγέλλει) its own distinguishing features, [sense-perception], which is incorporeal in definition and based on pneuma ([pneuma being] the capacity for sense-perception in its primary meaning, from which all the sense-organs are exhaled as though from a fountain, and on which all the reports from the objects of perception converge), is not itself affected by opposites. Rather, by contemplating opposites it discriminates [between them] and [for example] claims that white is distinct from black, and white from sweetness. For what is absurd is not the [act of] discriminating between opposites at the same time (any more than is the [fact of] arbitrating between individuals who are contradicting one another), but rather the [act of] being affected by opposites at the same time. (*In de An.*, 86.30–38, ed. Heinze.)

Themistius mentioned the εἰσαγγελία from the sense organs (τῶν αἰσθητηρίων, 86.6, ed. Heinze) also before,⁴¹ but here in the digression this topic, coming neither from Aristotle nor from Alexander, becomes pivotal. In the digression the point is no longer that the δύναμις at which terminate the different εἰσαγγελίαι is a single reality: the point is, rather, that this single reality is a higher-order power if compared with peripheral perceptions. Its seat is pneuma, that pervades the entire body and as such is able to report to the incorporeal power of the soul the information about peripheral sense-perceptions.

From all [that we have said] it is clear, then, that neither is sight in its primary meaning present in the eyeball, nor hearing in its primary meaning present in the ears, nor taste present in the tongue, but instead sight in its primary meaning, as well as taste, hearing, smell

³⁹Themistius, *In de An.*, 86.18–23, ed. Heinze: “But here someone might more reasonably believe that the capacity for sense-perception is like the point, specifically, like the centre of the circle where all lines from the circumference terminate. For this point is at the same time both a single [point] and more than one [point]: it is single since the centre of the circle is so; but more than one, because it is the termination of several straight lines that are also different. Thus the point is both undivided and divided, and is like this at the same time.” (Trans. Todd, 109.) As pointed out in the seminal study by Henry (1960), it was Alexander, *De anima* 63.6–13, who adapted Aristotle’s στιγμή transforming it into the centre of a circle: on the implications of this adaptation see Gregorić 2017 and Hangai in this volume; on Plotinus as a reader of Alexander on this point see D’Ancona 2017: 247–49.

⁴⁰Themistius, *In de An.*, 86.23–30, ed. Heinze: “So we can agree that the capacity that must in its primary meaning be called both ‘capable of perceiving’ as well as ‘sense perception’ has this ratio, since as a single entity it is a termination of several organs (πέρας ὁργάνων). So insofar as it is single and undivided, it is something that discriminates as a single thing and at the same time; but insofar as it is the termination of a number of divided things, the single [capacity] becomes more than one, so that nothing prevents it from also discriminating between more than one separate object as well as being a single [capacity]; that is because it is single and more than one at the same time. Furthermore, as we have often said, this [capacity] is not at the same time turned white and black, or chilled and heated. The absurdity consisted indeed in this.” (Trans. Todd, 109.)

⁴¹See the passage of 85.28–37, ed. Heinze quoted above.

and touch, are present in the pneuma that is the primary capacity for sense-perception. And when we say that the senses are in total five, we are saying that the sense-organs are [in total] five, and [the senses] are like five conduits of the sensory pneuma, channelled through the organs as from a single source, and the sense-perception in its strict and primary meaning uses these [organs]. Its five [senses] play the role of incoming messengers, while the single [sense] plays that of ruler or king (καὶ χώραν μὲν εἰσαγγελέων ἔχειν τὰς πέντε, ἄρχοντος δὲ ἢ βασιλέως τὴν μίαν): for just as in the case [of a king] the [incoming] messengers are numerous while the man who judges is one, so here too the organs importing messages are numerous, while the entity that decides about every [message from the senses] is one. So by means of this [single sense] we perceive by sight that we are seeing, and by hearing that we are hearing. For we perceive the activities themselves by exactly the same faculty by which we perceive the difference between them. Hence we do not discern sight by sight, as seemed to be the case a little earlier, but by the single [sense] aligned with each of the sense-organs. (*In de An.*, 87.1–15, ed. Heinze, trans. Todd, modified, 109–10.)

This passage elaborates more on the topic of the ἀγγελία of the sense-organs and combines it with the non-Aristotelian identification of pneuma as the seat of the common sense. It becomes evident here that not only Alexander, but also Plotinus counts as a source of Themistius' account of κοινὴ αἴσθησις, because it is Plotinus⁴² who famously compares sense-perception with our messenger:

But it is generally agreed that sense-perception is always ours—for we are always perceiving—but there is disagreement about Intellect, both because we do not always use it and because it is separate; and it is separate because it itself does not incline towards us, but we

⁴²In his note to the sentence “Its five [senses] play the role of incoming messengers, but the single [sense] plays that of ruler or king,” Todd (1996: 182 n. 19) refers instead to Aristotle's quotation of the *Iliad* II 204 at the end of *Metaph.* 12 as well as to the ps.-Aristotelian *De mundo* as the possible sources of the metaphor of the king. However, the passage comes patently from Plotinus. My sincere thanks go to the referee for calling attention to Porphyry's commentary on Ptolemy's *Harmonics*, 15.10–28, ed. Düring = 15.16–16.4, ed. Raffa, where the Plotinian image of the messengers and the king resurfaces. In my opinion it is not the case that Themistius takes the topic from Porphyry instead than directly from Plotinus, because in Porphyry's passage—evidently inspired by the Plotinian simile—the relationship between sense perception and reason is presented in quite a different way if compared with Themistius: the king (i.e. reason) has in itself a more precise and complete foreknowledge of what the messenger (sense perception) reports without full understanding: cf. Porphyry's *Commentary* on Ptolemy's *Harmonics*, trans. Barker, 93–94 (= 15.10–18, ed. Düring; 15.16–16.4, ed. Raffa): “For the situation of perception and reason is like that of a king and a messenger, in that the one grasps and knows everything accurately in advance, even while passing his time indoors by himself in his own palace, while the other can only gather up impressions of the things he encounters and report them to the ruler in so far as they have been impressed upon him. In this case, when the messenger has indicated in rough outline the impressions of the things he has seen, the king, since he knows everything in advance, does not merely learn what has been reported, but learns also whether the messenger has presented it inaccurately, and learns, in short, the whole constitution of what has been indicated to him. Just so, in the case of reason and perception, reason turns out to know the whole of perception's apprehension (*antilepsis*), and can indicate the things that are perceived more accurately than perception. Thus perception is prior to reason in its acquaintance with perceptible things, but is not as a consequence superior to reason in its judgement. Reason does not grasp only as much as perception sets in front of it, for the it would be posterior to perception not merely in time but in power as well. But having grasped everything in advance, it has the faculty of perception standing before it in the bodily organs as if on its doorstep; it takes from perception as much as perception can report, and by itself discovers what is accurate, making perception, too, more accurate through the latter's association with it.”

rather look up towards it. Sense-perception is our messenger, but Intellect is our king (αἰσθησις δὲ ἡμῖν ἄγγελος, βασιλεὺς δὲ πρὸς ἡμᾶς ἐκεῖνος). (Plotinus, *Enn.* V 3[49], 3.40–44, trans. Armstrong, V, 81.)⁴³

Not only is this passage the source of Themistius' account of the five senses as the messengers of our soul, but the Plotinian echoes in Themistius' own understanding of the common sense are many and important. Granted, the relationship of the inferior to superior works for Plotinus between sensation and intellect, while for Themistius it works between sense organs and the incorporeal perceptual power whose seat is the pneuma. But the presence not only of the simile, but also of its rationale—the relationship between *inferior* powers and a higher-order power—makes evident that Themistius' account of the common sense is inspired not only by Alexander, but also by Plotinus. A detailed commentary of the digression goes beyond the limits of this paper, and I will limit myself to mention only the fact that the idea of pneuma as the seat of an *incorporeal* power that receives and unifies the disparate data conveyed by the messengers (εἰσαγγέλλει μὲν ἕκαστον αἰσθητήριον τὰς οἰκείας διαφοράς, ἡ δὲ [i.e., the δύναμις] ἀσώματος οὐσα, 86.30–31) echoes the in-depth argument carried out by Plotinus in IV 7[2] against the Stoic pneuma.⁴⁴ For the present purposes, suffice it to repeat that the digression has no parallel in Aristotle: rather, it accounts for the Aristotelian κοινὴ αἴσθησις as that higher-order, incorporeal, and ruling power that unifies the sense-perceptions conveyed to the soul by the sense-organs as messengers.

7.3 Themistius' 'Logos' on the Common Sense, the pseudo-Philoponus, and Sophonias

The presence of this digression did not escape the later readers of Aristotle's *De anima*, both in late Antiquity and in Byzantine times. I will first focus on the pseudo-Philoponus, possibly Stephanus of Alexandria (fl. seventh century).

It is well known that Philoponus' commentary on the *De anima* contains a third book whose authenticity has been challenged since the publication of Philoponus' work in the series *Commentaria in Aristotelem Graeca* in 1897. The editor Michael Hayduck proposed for Book 3 the authorship of Stephanus of Alexandria, on the basis of the title as attested in two manuscripts.⁴⁵ The reasons to challenge

⁴³ Cf. Morel 2002, highlighting the Stoic origins of the image here adopted by Plotinus.

⁴⁴ In IV 7[2] Plotinus argues at length against the Stoic pneuma, claiming that as a corporeal substance it cannot receive at one and the same time different inputs, thus being unable to grant sense-perception (cf. again D'Ancona 2017: 177–82, 207–31, 235, 253–62, 274–78, 286, 307–16). Themistius proves to be well acquainted with Plotinus' argument, as shown by the very fact that he lays emphasis on the *incorporeal* nature of the power (δύναμις) whose seat is the pneuma included in his idiosyncratic account of Aristotle's common sense: ἡ δὲ ἀσώματος οὐσα τῷ λόγῳ καὶ ἐπὶ τοῦ πνεύματος βεβηκυῖα τοῦ πρώτως αἰθητικοῦ, 86.31–32, ed. Heinze (trans. Todd, quoted above).

⁴⁵ Hayduck, in the Praefatio to Philoponus 1898: v.

Philoponus' authorship for Book 3 however do not rest on this: rather, the attribution to an author different from Philoponus—namely, the author of Books 1 and 2—counted for Hayduck as a possible solution for the puzzle represented by the difference in style between Book 3 and the two first books. An even more important consideration for judging the authenticity of Book 3 is represented by the difference between this Book 3 and the Book 3 of Philoponus' *In De anima* lying in the background of the Latin version of Chapters 4–8, made by William of Moerbeke in 1268.⁴⁶ The Greek antecedent of Moerbeke's translation is lost, but a comparison between the text of Book 3 as edited in the *CAG* and the Latin version shows that Moerbeke did not translate *that* text. There is no scholarly consensus as to the proposed authorship of Stephanus of Alexandria,⁴⁷ and recently some attempts have been made to re-attribute Book 3 to Philoponus, with the understanding that Philoponus might have commented upon the *De anima* twice.⁴⁸ This is a question the present paper is not compelled to enter, but a mention of the problem was necessary to account for the label “pseudo-Philoponus” that I will continue to adopt for Book 3 of Hayduck's edition.⁴⁹

The discussion of the common sense is framed against the background of the σκοπός of Book 3 of Aristotle's *De anima*. According to the author, *De anima* 3 is devoted to the rational soul, not to soul in general as some think. Even if Aristotle deals with common sense and *phantasia*, which also belong to the irrational souls of the animals, he does so only in order to show the difference between the powers of the two different kinds of soul.⁵⁰ Some eristic readers of Aristotle might object that were it so, the discussion of the five senses would be supernumerary; now, they

⁴⁶ Philoponus 1966, ed. Verbeke.

⁴⁷ Hayduck's attribution is accepted by Blumenthal 1982: 54–63, while it is challenged by Bernard 1987: 154–63. For a survey of the scholarship on this text cf. Searby 2016: esp. 566–69. See also Marinus 2001: xxx, n. 2.

⁴⁸ Golitsis 2016; Steel (2017) attributes it tentatively to Philoponus himself: see in part. 225–26: “Two questions remain unanswered: why has the commentary on book 3 by Philoponus^a been replaced with another commentary and who might be its author? This replacement must have occurred quite early in the tradition, since the oldest manuscripts, both of the eleventh century, Parisinus gr. 1914 (*D* in Hayduck's edition) and Vaticanus gr. 268 (A) have it already. Interestingly, at the beginning of book III, a corrector in *D* (perhaps from the twelfth century) added: βιβλίον τρίτον ἀπὸ φωνῆς στεφάνου ('the third book from lecture notes by Stephanos'). For that reason, many scholars have considered this third book to be by Stephanos of Alexandria, a commentator of the generation after Philoponus. Recently, Pantelis Golitsis has argued against this attribution. In his view, the author of the alternative version of Book III is Philoponus himself, but now lecturing in his own person, and not just as a student of Ammonius. We do not know where the corrector of *D* found his information. It could also have been his own conjecture. However this may be, I take the lecturing Philoponus be the 'author' of Book III and call him Philoponus^b.”

⁴⁹ Cf. Tornau (2007: 105): “Unstrittig ist, daß der Text nicht ursprünglich zu dem uns vorliegenden Kommentar des Philoponos gehört haben kann, weil er sich von diesem in formaler Hinsicht signifikant unterscheidet und weil er offensichtlich nicht die Vorlage der von Wilhelm von Moerbeke im 13. Jh. angefertigten lateinischen Übersetzung von Philoponos' Kommentar zu Arist. *De an.* Γ 4–8 ist.”

⁵⁰ Ps.-Philoponus, *In de An.* 3, 446.12–18, ed. Hayduck.

are wrong, because the survey of the five senses aims only at highlighting the nature of the κοινή αἴσθησις as that intermediary power that, in so far as it differs both from the five senses and from the rational powers of the soul, steers a middle course between sense-perception and reasoning.⁵¹ The argument by which Aristotle shows that there cannot be more than five senses is a hypothetical syllogism whose συνημμένον and πρόσληψις are discussed at length.⁵² Aristotle's arguments for establishing the πρόσληψις are inductive (ἐκ τῆς ἐπαγωγῆς, 449.31); hence, says the author, it is better to have recourse to the *logos* that Themistius expounds in his commentary (ἐν τῷ ὑπομνήματι).

At the beginning of his exegesis of Book 3 of the *De anima*, Themistius sets for himself the task of explaining why Aristotle explores the possibility that there are more senses than the five, or less than them. In Themistius' account, Aristotle does so because it would have been impossible for him to account for the rational soul without prior consideration of its lower faculties.⁵³

Together with many other authors—most notably Plutarch of Athens, of whose exegetical work on the *De anima* the pseudo-Philoponus is the main doxographical source⁵⁴—Themistius is quoted several times, but even more interesting are the unacknowledged but literal quotations like the following, which occurs within the context of the account of common sense. In Themistius, this passage follows immediately that on honey as gold-coloured and sweet mentioned above.

⁵¹ Ps.-Philoponus, *In de An.* 3, 446.19–447.15, ed. Hayduck, in part. 446.25–446.2: “For the superior powers of secondary substances always have something in common with, some relation to, the inferior powers of primary substances, as happens, indeed, here. The superior powers of the non-rational such as common sense and imagination have something in common with opinion, which is the lowest of all the rational powers.” (Trans. Charlton, 21–22.)

⁵² Ps.-Philoponus, *In de An.* 3, 447.15–450.8, ed. Hayduck.

⁵³ Ps.-Philoponus, *In de An.* 3, 450.9–19, ed. Hayduck: Hayduck refers to 149.23, ed. Spengel = 81.11–17, ed. Heinze: “So, if there is no other body beyond the four elements and their compounds (and these are all the bodies in *this* world), and if those bodies have no quality beyond those that they are currently thought to have, then there is no sense that animals are missing. Obviously nature always provides less developed capacities in advance as a complete support for more developed ones, so that a person with reason and intellect would already possess all the senses.” (Trans. Todd, 103, Todd's emphasis.)

⁵⁴ Cf. Taormina 1989, fragments 25–35, 118–26.

Themistius, <i>In de An.</i> , 85.24–28	Ps.-Philoponus, <i>In de An.</i> 3, 479.22–31, ed. Hayduck
And it says that one of them is distinct at exactly the same time [it says that] the other is too. I mean that the [time] when [this happens] is not incidental. For example, I could here and now say that Plato the philosopher has arrived in Sicily, but I am [just] saying it now, but not that [it is] also [happening] right now. But the [sense] that distinguishes between white and cold also states that [distinction] at the time, and says at the time that [it is] also [true] at that time (trans. Todd, 108).	The third main point is that in which he [i.e., Aristotle] shows that it [i.e., the common sense] operates in an intemporal way (ἀχρόνως ἐνεργεῖ); and he shows this as follows: the common sense knows in exactly the same way in which it expresses itself. If, then, it expresses at one and the same time (ἐν ἐνὶ νῦν) the difference between sweet and white, and not at a given moment (ἐν ἄλλῳ μὲν νῦν) the difference that characterises the white and at another one (ἐν ἄλλῳ δὲ νῦν) that which characterises the sweet, it is clear that it is also at this one and the same time (ἐν ἐνὶ νῦν) that it knows the difference between sweet and white. In fact, when the common sense expresses itself at one and the same time, this is not incidental, but it is <i>per se</i> . For instance, consider what I say: ‘I now heard that Plato met Socrates when arrived in Sicily.’ Here the ‘now’ (νῦν) with respect to my actual hearing is <i>per se</i> : it is in fact now that I have heard this; but as for Plato’s leaving [Sicily] is concerned, the ‘now’ is incidental.

This passage suggests that the pseudo-Philoponus had Themistius’ passage in front of him. It is worth noticing that he replicates, and even emphasises Themistius’ presentation of tenets that are not in Aristotle without distinguishing them clearly from Aristotle’s. In fact, the passage quoted above is presented by the pseudo-Philoponus as the third point established *by Aristotle*; the second, just above, is that the common sense is an incorporeal power (οὐκ ἔστι σῶμα ἢ κοινὴ αἴσθησις, 479.8–9). The fourth, which follows shortly after, is presented as that in which Aristotle discusses the aporia of the opposite qualities, and the argument runs as follows: were the common sense a material entity, it would be easy to account for the fact that it receives opposite qualities (in the last resort, this is precisely what matter does in Aristotle); but this is not the case. “Aristotle” speaks as if he were well aware of the fact that common sense is an incorporeal and timeless power—something that Aristotle obviously does not say in the passage of *De anima* 3.2 that was the starting point of this discussion over the centuries, by Alexander, by Themistius, and eventually by the ps.-Philoponus. It is because “Aristotle” is convinced that this is the nature of the common sense that he wonders how is it possible that it gives room simultaneously to opposite qualities (ἀλλ’ ἐπειδὴ περ καὶ ἀσώματός ἐστι καὶ ἀχρόνως ἐνεργεῖ, διὰ τοῦτο ἀποροῦμεν πῶς δέχεται τὰ ἐναντία εἶδη ἅμα, 480.18–19). Also in this discussion Themistius is quoted twice, literally but without attribution. First, it is the Themistian image of the source that is echoed:

Themistius, <i>In de An.</i> , 86.31–34, ed. Heinze	ps.-Philoponus, <i>In de An.</i> 3, 480.27–29, ed. Hayduck
[sense-perception], which is incorporeal in definition and based on pneuma ([pneuma being] the capacity for sense-perception in its primary meaning, from which all the sense-organs are exhaled as though from a fountain (ἐξ οὗ τὰ αἰσθητήρια σύμπαντα ὥσπερ ἐκ πηγῆς ἐκπνεῖται), and on which all the reports from the objects of perception converge), is not itself affected by opposites (trans. Todd, 108).	The other senses proceed as from a common fountain (ὡς ἀπὸ κοινῆς γὰρ πηγῆς τῆς κοινῆς αἰσθήσεως προέρχονται αἱ ἄλλαι αἰσθήσεις), so that it is one and the same from the viewpoint of the subject, even though in definition they are many. It is in so far as it is one that it can judge about the differences, and it is in so far as it is many in definition that it can receive the opposites.

Shortly after, from the same Themistian passage, pseudo-Philoponus borrows the identification of the κοινὴ αἴσθησις with an incorporeal power located in the omnipervasive pneuma, which characterised the digression discussed above.

Themistius, <i>In de An.</i> , 87.5–7, ed. Heinze	ps.-Philoponus, <i>In de An.</i> 3, 481.18–22, ed. Hayduck
And [the senses] are like five conduits of the sensory pneuma (τοῦ πνεύματος τοῦ αἰσθητικοῦ), channelled through the organs as from a single source, and the sense-perception in its strict and primary meaning uses these [organs] (trans. Todd, modified, 108).	The common sense is incorporeal taken in itself, but it is in a substratum that is the body. The pneumatic body (τὸ πνευματικὸν σῶμα), in fact, operates as its substratum. Therefore the species of the sense-objects, even in the case they are opposite, come to be in the pneumatic [body] according to its different parts; then, this power judges the affections that are present in the pneuma.

Following in Themistius' footsteps, the pseudo-Philoponus describes the atemporal operation of the common sense (see above, ἀχρόνως ἐνεργεῖ, 480.18) as that incorporeal power that unifies the sense-perceptions conveyed by the sense-organs to the pneuma, thus enabling the higher cognitive processes to take place.

This admittedly non-Aristotelian account of κοινὴ αἴσθησις is reflected also in the Byzantine paraphrase of the *De Anima* by Sophonias (13th–14th cent.),⁵⁵ an author who mentions Themistius from the outset of his own work (ὁ εὐφραδὴς Θεμιστίος, 1.20, ed. Hayduck), and whose description of the “Aristotelian” κοινὴ αἴσθησις runs as follows:

In so far as it [i.e., the αἴσθησις] has different powers, nothing prevents it from being receptive of different, and even opposite items at one and the same time; but in so far as it is one as for its substratum, it perceives and judges the opposite as a unique reality. [...] Therefore also the sense-perception, being an incorporeal, indivisible and simple power, has its seat in the terminal point of the sense-organs (ἵδρυνται ἐν τῷ πέρατι τῶν αἰσθητηρίων), that are multiple; and this terminal point is the pneuma, in which the hegemonic principle is located. (Sophonias, *In de An.*, 114.19–29, ed. Hayduck.)

⁵⁵ Sophoniae, *In de An.*, ed. Hayduck (1883). Cf. Searby 2016: 473–77, esp. 473 and 476.

Not only does Sophonias endorse the essential features of Themistius' solution of the aporia of the opposite qualities and his recourse to the pneuma (here squarely identified with the hegemonic principle that ultimately derives from Chrysippus, who located it in the heart⁵⁶), but his dependence upon Themistius' account is evident even in the details: compare Themistius' "since as a single entity it is a termination of several organs (πέρας ὀργάνων)" (86.25, ed. Heinze) quoted above, and Sophonias' ἐν τῷ πέρατι τῶν αἰσθητηρίων.⁵⁷ Since it has been shown with cogent arguments that Sophonias was acquainted with the commentary on *De anima* 3 that lies in the background of the Latin version by William of Moerbeke of chapters 4–9 of this book, namely the genuine commentary by Philoponus,⁵⁸ the possibility exists, in principle, that Sophonias depends upon Themistius not directly, but indirectly. A specific comparison cannot be made because, as mentioned above, we have the genuine commentary by Philoponus in Moerbeke's version only as for chapters 4–9, and more precisely from 429a10 to 432a17; in any case, Sophonias' acquaintance with Themistius' paraphrase of the *De anima* is explicitly declared.

From all this, I think one is entitled to conclude that the interpretation of the common sense worked out by Themistius on the basis of Alexander and Plotinus was widespread and influential. It substantially contributed to shaping an image of the Aristotelian inner senses as the intermediate powers that convey to the rational soul the properties of the objects of sense-perception, with the most important of them, the κοινὴ αἴσθησις, as a spiritual, timeless and simple power of the soul.

7.4 Avicenna as a Reader of Themistius' Paraphrase: The Common Sense

This demonstrably modified version of the Aristotelian common sense initiated by Themistius was influential not only in Greek philosophical literature of late Antiquity and well into the Byzantine Middle Ages, but also in the Arabic philosophy.

Themistius' paraphrase of the *De anima* was translated into Arabic by Ishāq ibn Ḥunayn (m. 910).⁵⁹ It is extant, though not complete, and has been edited in 1973 by M. C. Lyons.⁶⁰ The translation is also mentioned in the medieval Arabic bibliographical sources, chiefly by Ibn al-Nadīm (d. 995) in his *Kitāb al-Fihrist*, and later

⁵⁶ Cf. Calcidius, *In Tim.* 220, in Von Arnim (ed.), *SVF* II 879: "Stoici vero cor quidem sedem esse principalis animae partis consentiunt."

⁵⁷ My sincere thanks go to the anonymous referee for pointing out that there are close correspondences also in Alexander's *De anima*, 63.28–64.3.

⁵⁸ Van Riet 1965.

⁵⁹ As attested by Ibn al-Nadīm in the *K. al-Fihrist*: see the discussion below.

⁶⁰ Lyons (1973: vii), pointing to the fact that the unique manuscript that contains the Arabic version is incomplete: "In the manuscript of Themistius all but the first leaf of the introductory section has been lost. The greater part of the second section is preserved and from the beginning of the third section the text runs consecutively to a point near the end of the seventh where it finally breaks off."

on by Ibn al-Qifṭī (d. 1248) in his *History of Learned Men* (*Ta'rikh al-ḥukamā'*). In his entry on Aristotle's *De anima*, Ibn al-Nadīm claims that Ḥunayn ibn Ishāq (d. 873) made a complete Syriac translation of it and Ishāq (his son) translated it into Arabic, except for a short section. Still according to Ibn al-Nadīm, Themistius wrote a commentary on the whole work, dealing with Book I in two sections, with Book 2 in two sections, and with Book 3 in three sections.⁶¹ At this point, Ibn al-Nadīm adds the following remark: "Ishāq said: I translated this work into Arabic from an inferior manuscript. After thirty years I found an extremely good manuscript with which I collated my first version, and it is the commentary of Themistius."⁶² As is often the case with Ibn al-Nadīm's pieces of information on Aristotle's works and their exegeses, it is not clear if the sentence refers to Aristotle's *De anima*, to Themistius' paraphrase, or to both. Yet, the statement "and it is the commentary of Themistius" implies either (i) that Ishāq made *two* translations of the paraphrase, or (ii) that he made two translations of Aristotle's *De anima*, one of them based on the paraphrase.⁶³ This ambiguous sentence was rephrased as follows by Ibn al-Qifṭī: "Ishāq made from an inferior manuscript a translation of what Themistius had written and then, after thirty years, he emended it by collation with a good manuscript."⁶⁴

Leaving aside the discussion of the statements of the medieval bibliographers, a systematic inquiry on the circulation of Themistius' paraphrase of the *De anima* in the Arabic-speaking world has not yet been done, although its importance for Avicenna and Averroes has been studied with regard to the issue of intellect.⁶⁵ As a

On the relationship with the Greek text of Themistius' paraphrase cf. Lyons 1955 and Browne 1986. On the translations of Aristotle's *De anima* see Gätje 1971 and Ivry 2001.

⁶¹ Ibn al-Nadīm, *K. al-Fihrist*, 251.11–15, ed. Flügel, trans. Dodge, 605. It is evident from this account that the Arabic readership was acquainted with a text subdivided into the seven *logoi* of most Greek manuscripts (see above note 20).

⁶² *K. al-Fihrist*, 251.16–18, ed. Flügel, trans. Dodge, 605.

⁶³ This seems to be the interpretation favoured by Lyons (1973: ix): "Though it could imply that Ishāq made two translations of Themistius, it might merely mean that his second translation of the *De anima* was based on the Aristotelian text contained in Themistius." However, one might wonder how this was possible, because Themistius' paraphrase has no clear-cut distinction between Aristotle's lemmata and the exegesis.

⁶⁴ Ibn al-Qifṭī, *Ta'rikh al-ḥukamā'*, 41.12–13, ed. Müller/Lippert. The ambiguity here is solved in the sense that there was only one translation of Themistius' paraphrase, first imperfect, and then improved. However, this seems to be only a way to make up for the difficulties of Ibn al-Nadīm's account, without any access to first-hand documentation.

⁶⁵ On Avicenna's acquaintance with Themistius cf. Gutas 2014: 54, 58, 170–72, 273, 326, 328, 329, 353–55 and Taylor 2018—I would like to thank Prof. Taylor for sharing it with me. As for Averroes, cf. Gutas 1999 and Taylor 2013. Taylor (2013: 7–8), calls attention to the fact that "in preparing all three of his commentaries on the *De anima*, Averroes had at hand the *Paraphrase of the De anima* by the late Greek commentator Themistius. In his analyses in the Short and Middle Commentaries on the *De anima* Averroes made use of this work sometimes directly citing Themistius and at other times drawing inspiration without citation. Careful examination of the three Commentaries on the *De anima* gives clear evidence that Averroes made three distinct studies of the Paraphrase by Themistius in preparing the Commentaries. In the Long Commentary on the *De anima*, however, it is clear that he worked much more closely with the text of Themistius than ever before and that he was fully engaged with it in a critical fashion. And it is that critical engagement with the

conclusion of this inquiry on Themistius' account of the common sense, I will focus on its possible influence on Avicenna's doctrine of the inner senses.

A first hint that Avicenna was acquainted with Themistius' treatment is given by the fact that the example provided for the common sense as the power that grasps two qualities conveyed by two different special senses is, like in Themistius and at variance with Aristotle and Alexander, that of honey:

Themistius, <i>In de An.</i> , 85.21–24, ed. Heinze	Avicenna, <i>K. al-nafs</i> IV 1, 166.12–13, ed. Rahman
For when it perceives honey as a gold-coloured and sweet, or snow as cold and white, it does not perceive the whiteness at one time and the coldness at another, but [both] at one and the same time (trans. Todd, 108).	As for those things that are perceived (<i>maḥsūsa</i>) like when we perceive, for instance, that something is gold-coloured (<i>aṣfar</i>) and we judge that it is honey and sweet, this is not something that sense-perception gives us at precisely that time (<i>fī hadhā l-waqt</i>).

Even more importantly, the account of pneuma as the seat of the common sense (*al-ḥiss al-mushtarak*) is telling. It is obvious that the Avicennian doctrine of the inner senses as properties of the pneuma located in the various ventricles of the brain owes much to Galen; it is nevertheless interesting to compare the passages of the table below. They suggest that Avicenna might have found at least a confirmation of his physiological ideas about brain in Themistius' description of the Aristotelian common sense:

Themistius, <i>In de An.</i> , 87.1–9, ed. Heinze	Avicenna, <i>K. al-nafs</i> V 8, 263–68, ed. Rahman
From all [that we have said] is clear, then, that neither is sight in its primary meaning present in the eyeball, nor hearing in its primary meaning present in the ears, nor taste present in the tongue, but instead sight in its primary meaning, as well as taste, hearing, smell and touch, are present in the pneuma that is the primary capacity for sense-perception. And when we say that the senses are in total five, we are saying that the sense-organs are [in total] five, and [the senses] are like five conduits of the sensory pneuma, channelled through the organs as from a single source, and the sense-perception in its strict and primary meaning uses these [organs]. (Trans. Todd, modified.)	First we say that the first vehicle of the psychic corporeal faculties is a subtle body (<i>jism laṭīf</i>) that pervades the concavities, and this body is pneuma (<i>rūḥ</i>) [263.9–10]. [...] Among the powers of brain, sight is performed by a crystalline humor like transparent water which receives the forms of the visible things and conveys them to the seeing pneuma (<i>al-rūḥ al-bāṣir</i>). [...] Smell [...]. Taste [...]. Touch [...]. [267. 7–17]. As for the formative faculty (<i>al-quwwa al-muṣawwira</i>) and the common sense (<i>al-ḥiss al-mushtarak</i>), they derive from the pneuma (<i>rūḥ</i>) located in the anterior part of the brain [268.4–5].

Paraphrase on the *De anima* by Themistius which played the key role in Averroes' development of his new doctrine of the unique, separate yet shared Material Intellect in the Long Commentary on the *De anima*, a doctrine which caused great and recurring controversy in Latin Europe."

Themistius presented the Aristotelian doctrine of the common sense in an idiosyncratic way, combining with one another Alexander's solution to the difficulty of the opposite qualities perceived simultaneously and the Plotinian doctrine of the sense-perception as the soul's messenger. On the one hand, Themistius was well aware of Plotinus' critique of the Stoic pneuma; on the other, he wanted to combine the Aristotelian κοινή αἴσθησις with a new version of pneuma, transformed into the seat of a bodiless power. As such, the pneuma that features in Themistius' digression has, embedded in it, that unique and pervasive power of the soul that is receptive of the various sense-perceptions. Such a timeless and ruling power counts as the link between the inferior powers of the sensitive soul and the higher functions of the cognitive soul.

Due to Themistius' procedure of rephrasing Aristotle, this doctrine was echoed in Greek late Antiquity, possibly by Avicenna in his own doctrine of the inner senses, as well as in Byzantine times, and in both cases as if it were exactly Aristotle's. It seems to me it is fair to conclude that it was this description, worked out by Themistius, that became part and parcel of the philosophical psychological theories of the authors discussed in this paper.

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Chapter 8

On Common Sense, Estimation, and the Soul's Unity in Avicenna



Jari Kaukua

Abstract This paper addresses two questions related to Themistius' alleged influence on Avicenna's theory of the common sense. The first question concerns the phenomenon of incidental perception, which Themistius explained by means of the common sense. For Avicenna, on the contrary, the explanation of cases like our perceiving something yellow as honey involves the faculty of estimation and the entire system of the internal senses that he coined, and this results in an analysis that is considerably more complex than Themistius'. The second question concerns Themistius' claim according to which an incorporeal spirit is the primary subject of perception. I argue that Avicenna departs from such a view both because for him spirit is a corporeal substance and because he insists that the subject of all cognition is the soul, not any of its faculties. Finally, I conclude by briefly considering other, more general ways in which Themistius could have influenced Avicenna's psychology.

8.1 Introduction

The medieval reception of Aristotle's psychology was not a simple adoption of the doctrine put forth in the *De anima* and the *Parva naturalia*. The late ancient commentators had already introduced controversial questions of interpretation, which acted as catalysts for still more thorough transformations of the Peripatetic doctrine by philosophers writing in Arabic. One interesting avenue of such a transformative reception is constituted by Peripatetic cognitive psychology, and especially the emerging doctrine of the so called internal senses. In her erudite paper, Elisa Coda argues that the late ancient commentator and paraphrast Themistius (d. 389) played an especially important role in the later Greek and Arabic transmission of Aristotle's

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doctrine of the common sense (Gr. *koinē aisthēsis*, Ar. *ḥiss mushtarak*). In particular, she suggests that Themistius was a formative influence for Avicenna (d. 1037) whose fivefold model of the internal senses provided the starting point for most of the subsequent discussion in both Latin and Arabic.

In the following, I will raise some complications concerning the relation between Themistius and Avicenna. I believe that at the very least these complications warrant us to continue tagging the aforementioned model of the internal senses as properly Avicennian; although the theory does have its roots in late ancient soil, it is a remarkably new kind of outgrowth. This is not to say that Themistius was not an influence on Avicenna or other philosophical psychologists writing in Arabic. It has been argued that Themistius was central for Avicenna's abstractionist theory of cognition,¹ and he was demonstrably a formative source for Averroes' (d. 1198) notorious theory of the unicity of the material intellect.² But to what extent did he determine Avicenna's theory of the internal senses in particular?

8.2 Themistius' Influence on Avicenna's Theory of the Common Sense

Coda introduces two central pieces of evidence for her claim that "the Avicennian doctrine of the common sense owes much to Themistius' treatment" (Chap. 7, 130 above). The first of these is the phenomenon of our recognition of the sweetness of honey merely by seeing its colour, used by both Themistius and Avicenna as a case example by means of which to make a point about the intricacies in the perception of content more complex than the sensibles proper to each sense. In Themistius, the example is meant to show the importance of common sense in explaining the empirical fact that we can both distinguish between different sense modalities and perceive the same object under multiple sense modalities. For instance, we can truthfully say that this white thing is not this sweet thing.³ By the same token, we perceive honey as both yellow and sweet. Both phenomena require that there is one cognitive faculty that is capable of considering the two sensible contents simultaneously, and in the latter case of combining and comparing the separate inputs arriving

¹Taylor 2019. According to this theory, all cognition consists in the abstraction (*tajrīd*) of cognitive forms from their material attachments. Abstraction is a process that takes place in increasing stages: sense perception abstracts the form from its designated matter but still requires a constant causal connection between that matter and the sense organ; imagination abstracts from the causal connection but retains the sensible features; estimation abstracts from the sensible features but retains the connection to a particular sensible object; and finally, intellection abstracts from the connection to any single particular.

²See Averroes, *Comm. in de An.*, ad 3.7, 431b16–19, 480–502.

³Cf. Thāmistīyūs, *In de An.* 5, 148. I here cite exclusively the Arabic translation of Ishāq ibn Ḥunayn, the only extant Arabic translation and possibly the one Avicenna used (see, however, the next note). For references to the Greek text, please consult Coda's paper in this volume.

through the eyes and the tongue, the respective organs of vision and taste. In the Arabic text of Ishāq ibn Hunayn (d. 910), the only extant Arabic translation and quite possibly the text Avicenna would have read,⁴ the relevant passage reads as follows:

When one senses that honey is yellowish red and that it is sweet, or that snow is cold and that it is white, one does not sense white at one time and cold at another time, but at one and the same time.⁵

Themistius' point about the two perceptions taking place at one and the same time is apparently to rule out any sort of inference or association by memory. For this it is crucial that there has to be *one* faculty that is capable of perceiving both sense modalities at one and the same time, and according to Themistius, this faculty is the common sense.

The second piece of evidence for Themistius' influence on Avicenna is that both authors allegedly rely on the same, or reasonably similar, notion of spirit (Gr. *pneuma*, Ar. *rūḥ*) to explain peculiar features of the common sense. As Coda shows, Themistius takes spirit to be the organ of common sense, and goes on to argue that the real perceiver in sensation is this spirit, not the five organs. Let us quote in Ishāq's Arabic again:

It is shown by all this that primary vision is not in the [the organ] which sees (*al-nāẓir*), nor is primary hearing in the ears or taste in the tongue. Instead, primary vision, taste, smell, touch, and hearing only exist in the spirit that senses primarily. When we say that the senses are five in total, we only mean that the organs of sense are five, and that the sensing spirit flowing in the organs is like five [streams] flowing from [one] spring. When it comes to [what] the sense [is] in reality and in the primary manner, it is one and it employs these.⁶

In Coda's account, this spirit that is the real subject of sense perception is different from the organs of the five external senses, because it is incorporeal. Furthermore, it is precisely its incorporeality that enables it to perceive two sense objects at the same time, which would be impossible, were the objects inhering in one and the same corporeal substrate, for in that case they would have to be at least spatially distinct, inhering in different parts of that substrate. This in turn would raise again the question of how those two parts can figure together in a single perception. Besides, as Alexander of Aphrodisias (*fl. ca* 200) had already shown with his "immateriality thesis,"⁷ there are cases in which the spatial distinction model will not work. Suppose, analogously, that we see because patches of colour travel from visible objects to our eyes through the intervening air, and that we can see patterns

⁴This is uncertain, because as Coda mentions (Chap. 7, 143–44), an ambiguous reference in the bookseller and bibliographer Ibn al-Nadīm (d. 990) suggests that Ishāq may have produced two translations of the text, and there are reasons to believe that Avicenna may have used the other one. See also Frank 1958/59 and Lyons 1973, viii–xi.

⁵Thāmistiyūs, *In de An.* 5, 148.12–15.

⁶Thāmistiyūs, *In de An.* 5, 151.14–152.1.

⁷Gregorić 2017: 52. I have not found an explicit reference to this argument in Avicenna. However, his theory of colour as a configuration of light, and the related denial of the corporeality of light (*Shifā': Nafs* 3.2–3), can avoid the problem by largely the same means.

of colour because different colours in the pattern are transmitted by different parts of the air. Then, if one person were looking at a white wall and another person a black wall in a perpendicular angle to the first, exactly the same volume of air would have to transmit both whiteness and blackness, which collapses the model. Themistius argues along very similar lines for the incorporeality of the common sense:

As we have said many times, it does not become simultaneously white and black or hot and cold, for this is absurd.⁸ Instead, each sense notifies it of the kinds that are proper to [the sense]. When it comes to it, it is incorporeal by [its] *ma 'nā'*⁹ and it contains and has power over (*mushtamilar^{am} mustahwidhar^{am}*) the spirit that senses primarily. [The spirit] is that from which all the senses are fed, like from [one] spring, and to which all the notifications from sensible [things] are conjoined. Hence, [the faculty of common sense] is not acted upon by opposites, but it regards the opposites, determining and judging that the white [thing] is different from the black [thing] and the bitter is different from the sweet. [What was] absurd is not the determination of such opposite things simultaneously, just as it is not disgraceful to regard justice between opponents who contradict each other, but being simultaneously acted upon by opposite things.¹⁰

In order to be able to consider the two perceptual contents simultaneously, the common sense must be incorporeal. Notice, however, that unlike Themistius' original Greek, Iṣḥāq's Arabic translation does not specify that the spirit through which the common sense operates is incorporeal, only that the faculty itself is such by its essence.¹¹ This is an important point with regard to the question of Themistius' influence on Avicenna, to which we shall now turn.

8.3 Common sense and Estimation

Let us begin, however, with our perception of honey. As Coda has shown, we find Themistius' example employed by Avicenna in *Shifā': Nafs* 4.1. Let me quote the relevant passage with some of the surrounding context:

[W]e make judgments about what is sensed by means of *ma 'ānī'*¹² that we do not sense, either because it is in their natures not to be sensed at all or because they are sensed but we do not sense them at the moment of judgment. As regards those in the nature of which it is

⁸Literally, disgraceful (*al-shani*).

⁹Iṣḥāq here renders the Greek *logos* by the notoriously ambiguous term *ma 'nā*, which I hesitate to translate. In my understanding, the idea is that the essence of the common sense, as captured in a concept, entails that the common sense is incorporeal.

¹⁰Thāmistiyūs, *In de An.* 5, 151.5–13.

¹¹Although Iṣḥāq's Arabic is profuse in personal pronouns, it consistently distinguishes between the masculine (here in reference to *rūḥ*, or spirit) and the feminine (here in reference to the *quwwa*, or the faculty, of common sense) in this passage. I have spelled out the reference in square brackets.

¹²Throughout this passage, Avicenna uses the term *ma 'nā* (pl. *ma 'ānī*) in the technical sense denoting the cognitive objects proper to the faculty of estimation. In order to stay clear of the debate of how exactly the *ma 'ānī* should be understood or how the term should be translated, I have chosen

not to be sensed, they are such as the hostility, maliciousness, and antipathy that the sheep perceives in the form of the wolf, overall the *ma'nā* it avoids, or the agreeability that it perceives from its fellow, overall the *ma'nā* it is fond of. These are things which the animal soul perceives but none of which is shown by the sense. Hence, the faculty by means of which they are perceived is another faculty, let it be called estimation (*al-wahm*). As regards those that are sensed, we see for instance something yellow so that we judge that it is honey and sweet. This is not brought about by that which senses at this moment. It belongs to the genus of what is sensed, albeit that the judgment itself is not sensed at all even if its parts belong to the genus of what is sensed. It does not presently (*fī l-hāl*) perceive [the sweetness]. Instead, it is a judgment that judges about [the sweetness] and can be mistaken about it. It is also due to that faculty.¹³

Although the example of perceiving something yellow as honey and therefore sweet is familiar from Themistius, the context shows that Avicenna is applying it to make a rather different point. He is not primarily interested in our capacity of perceiving different sense modalities together, a capacity he has discussed earlier in the context of common sense, along lines that do go back to the Peripatetic tradition but are not especially dependent on Themistius.¹⁴ Instead, he uses our perceiving the sweetness of honey by sight to make a point about incidental perception, the phenomenon of seeing a visible feature, recognising the object carrying that feature, and becoming aware of other features the object can be expected to have, even if these other features are not presently perceived.

More importantly still, it is not common sense but Avicenna's newly coined faculty of estimation that explains our perception of something yellow as honey and sweet. This is evident from the context provided in the quote: Avicenna introduces the case of the honey as another, parallel type of activity by the faculty responsible for the sheep's famous perception of the wolf's hostility towards it, a point that he emphasises at the very end of the passage. Moreover, there are systematic grounds on which he thinks common sense would not be able to explain such incidental perception. It is crucial to Avicenna's common sense, just as it was for Themistius', that the two sense objects of different modalities, which it perceives together, are simultaneously received through the respective senses. By contrast, the whole point about incidental perception is that one of the two contents is *not* presently sensed but rather brought to mind by other means.

The details of incidental perception would have to be spelled out by means of the Avicennian system of the internal senses. The process would go roughly as follows¹⁵: recognising the *ma'nā* of honey in the presently sensed yellow, the estimative faculty orders the compositive imagination (*takhayyul*) to retrieve other sensible features of honey from *khayāl*, a storehouse of images, or a bank of purely sensible content. This observation points at a feature of Avicenna's cognitive psychology the

to let the Arabic term stand for this class of objects. I have presented my interpretation in Kaukua 2014.

¹³ Avicenna, *Shifā'*: *Nafs* 4.1, 166.5–16.

¹⁴ Avicenna, *Shifā'*: *Nafs* 4.1, 164–65.

¹⁵ This account is not entirely uncontroversial. Arguably the most prominent interpretation is in Black 1993, which I discuss in Kaukua 2014.

relations of which to earlier authors, such as Themistius, would be worth charting in further research. Although Avicenna's approach in psychology is to analyse psychological phenomena by attributing the various acts constitutive of them to distinct faculties of the soul, it is clear that at least in complicated acts like incidental perception, he understood those faculties to function as a single whole.¹⁶ Indeed, there are very few cognitive phenomena that we can straightforwardly attribute to any single faculty. Thus, when assessing the similarities and differences between the functions of a cognitive faculty in Avicenna and any of his predecessors, it is important to consider how they understood the entire system of the faculties. If the systems are different, how does this affect the individual faculties?

8.4 Spirit, Dualism, and the Primary Subject of Perception

Let us then turn to the function of spirit in Avicenna's cognitive psychology. The first thing to note is that for Avicenna, spirit is not incorporeal but "a subtle body," as he puts it in the passage quoted by Coda.¹⁷ On the other hand, as we saw above, Ishāq's Arabic translation does not commit Themistius to the view that the spirit is incorporeal either. However, once the Themistian repercussions of the immateriality thesis are set aside, there are other, more plausible sources for Avicenna's conception of spirit and its role in cognitive psychology. As Coda mentions, most likely a stronger influence would have been Galen's (d. ca 216) medical theory of the brain and the entire neural network through which the spirit flows. In this regard, there are considerable similarities between the theories of vision of Avicenna and the medieval master of Optics, Ibn al-Haytham (d. 1040), the latter of whom would have been naturally much closer to Galen and the optical tradition than to Themistius. We also need to bear in mind the fact that according to Avicenna, operating by means of the spirit is by no means exclusive to the common sense. On the contrary, all of the cognitive faculties that have corporeal organs, and indeed even the motive faculties, rely on the swift movement of spirit through the neural network. For a concrete example, "it may happen that a desired form is imagined due to some cause, so that nature is then triggered to gather sperm and send out spirit to spread the organ of copulation, and sperm may be ejaculated."¹⁸ Here, spirit is involved both in the

¹⁶Avicenna's critics did not always appreciate this. For instance, Abū l-Barakāt al-Baghdādī (d. 1165), and later on Mullā Ṣadrā Shīrāzī (d. 1635/36), accused him of analysing the soul's primordial unity into pieces that he failed to put back together. See my concluding remarks for some further elaboration and references.

¹⁷Avicenna, *Shifā'*: *Nafs* 5.8, 263.9. This is not entirely insignificant, for there are questions, albeit ones quite unrelated to our present concern, in which the corporeality of the organs of the internal senses is of pivotal importance. Consider, for instance, Avicenna's argument for the corporeality of our faculty of imagination, by means of which we think about geometrical problems, in *Shifā'*: *Nafs* 4.3, 188–92. For another example, he explains vertigo as due to the spirit's circular movement in the brain (*Shifā'*: *Nafs* 4.1, 164).

¹⁸Avicenna, *Shifā'*: *Nafs* 4.2, 179.18–20.

imagining that goes on in the brain, in the transmission of the relevant information to the other organs, and in the contractions and extractions of the muscles.¹⁹

In the passage that spells out the relation between common sense and spirit, Themistius also claims that the spirit, and by association the common sense employing it, is the primary subject of perception. Interestingly, Avicenna concludes his brief discussion of the faculty by saying that “in reality, that which senses is [the common sense].”²⁰ Is this another sign of Themistius’ influence? The question is worth further research, but let me point out two possible complications. First, Avicenna is not entirely unambiguous about which of the faculties is ultimately responsible for sense perception: he goes on to say that it is the estimation that is the judge, or indeed the “greatest judge,” in an animal.²¹ He also asserts that, notwithstanding his own attempts at assigning each of the internal senses, estimation included, to a distinct part of the brain, it would be more correct to say that the estimation has the entire brain as its organ, because it governs all the other faculties in its own operation.²² Finally, in a long passage from *Shifā’*: *Nafs* 5.7, designed to argue for the unity of the soul, Avicenna emphasises that the ultimate subject acting and perceiving through all its faculties is the soul.²³ Perhaps closer analysis will show that there is no real confusion between these seemingly conflicting statements, but in any case it is clear that the common sense’s role as the primary subject is considerably more complicated in Avicenna than in Themistius.

Secondly, and more importantly, saying that something senses or perceives in the primary sense of the word has a very specific meaning in Avicenna’s explicitly dualist framework, and it requires further research to assert whether the same holds of Themistius. In *Shifā’*: *Nafs* 2.2, Avicenna makes a clear distinction between an extramental object of sensation and an immediate object that is subsequently taken as a representation of the extramental one:

The truth is that the senses need bodily organs, and some of them need intermediaries. For sensation is a kind of affection because it is a reception from them of the form of the sensible, and a change to conformity with the sensible in actuality. Thus the thing sensing in actuality is actually like the sensible, and the thing sensing in potency is potentially like the sensible. [...] Hence, in some respect the thing sensing senses itself, not the sensible body, because it is what is informed by the form which is the proximate sensible. As for the external thing, it is what is informed by the form, which is the remote sensible. Thus [the soul] senses itself, not the snow, and itself, not the cold, if we mean by [sensation] the closest sensation in which there is no intermediary.²⁴

¹⁹ Cf. also Avicenna, *Shifā’*: *Nafs* 3.7, 144; 3.8, 152–54; and 5.8, 265–66. Avicenna also specifies that spirit comes in different degrees of subtlety, depending on the function in which it is designed to serve (5.8, 263–64).

²⁰ Avicenna, *Shifā’*: *Nafs* 4.1, 165.8.

²¹ Avicenna, *Shifā’*: *Nafs* 4.3, 185.7 and 182.14, respectively.

²² Cf. Avicenna, *Shifā’*: *Nafs* 4.1, 168–69; and 5.8, 268.9.

²³ Avicenna, *Shifā’*: *Nafs* 5.7, 252–57. I have analysed this passage at length in Kaukua 2015: 64–72.

²⁴ Avicenna, *Shifā’*: *Nafs* 2.2, 66.5–14.

Avicenna explicitly says that the subject of sensation, which he identifies as the soul, primarily senses itself, or the object represented in itself, and only secondarily the extraneous object the immediate object represents. This does not necessarily have to rule out the idea that the spirit in the brain, infused with the soul, is that which senses itself carrying a representation of an extramental form, along the lines of the passage from Themistius. However, once we read this passage in the light of a series of statements in the posthumous compilation of Avicenna's teaching known as the *Ta'liqāt*, the point becomes more radical. Here is a representative quote:

Perception (*al-idrāk*) only belongs to the soul, and [when it comes to] that which senses, only sensation (*al-iḥsās*) of and being acted upon by the sensed thing belong to it. As evidence of that, that which senses may be acted upon by that which is sensed while the soul is inattentive (*lāhiya*), and then the thing is neither sensed nor perceived.²⁵

Thus, it is only in the soul that sensation, or perception in the strong sense of the word emerges. I take this to mean that the corporeal faculties of sensation, including the common sense and the spirit through which it operates, amount to physical processes that are necessary but not sufficient conditions for sense perception as a mental phenomenon. To put this another way, sense perception as a mental phenomenon requires that the soul's attention be directed at the operation of the relevant faculties through their respective organs. Furthermore, it is only on this level that perception becomes a properly cognitive phenomenon that we can assess in normative terms by asking questions about its veridicality. In this sense, neither the common sense nor the spirit that functions as its instrument is the primary subject of perception for Avicenna. As the lengthy argument in *Shifā': Nafs* 5.7 clearly shows, for him there is only one subject of perception, that is the soul.

8.5 Conclusion

I take the foregoing observations to show that the question of the extent of Themistius' influence on Avicenna's cognitive psychology remains worthy of further research. Avicenna knew Ishāq's translation of Themistius' paraphrase of the *De anima*, but his nuanced theory of the internal senses cannot be straightforwardly traced back to that text. And where there are clear points of contact, they must be investigated in light of the differing frameworks of the two authors' general psychological doctrines.

One wonders, however, whether Themistius and other Aristotelian commentators exercised a more general type of influence on Avicenna, which made him cling on to remnants of Aristotelian psychology that he no longer really needed in his own system. The question of how to reconcile the unity of perception with real distinctions between the cognitive faculties, hinted at in the above, is a case in point. Once we have established a strict distinction between the mental and the physical, as in

²⁵ Avicenna, *Ta'liqāt* §10, 30; cf. §11, 32; §462, 271; §998, 575–76; and §1005, 579.

Avicenna, and once the unity of perception can be grounded in an incorporeal soul instead of a corporeal faculty, as again in Avicenna, can we not discard the old attempt to solve the problem of unity and difference by means of faculty analysis? There may be tendencies in this direction already in Aristotle,²⁶ and one might ask why the alternative explanation seems not to have developed among pre-Avicennian Aristotelians. Moreover, Plotinus' metaphor of messengers for the senses, which Coda maintains was important to Themistius, seems to yield to an interpretation in which only the king (that is, the intellect, as in Plotinus, or the incorporeal substance that functions as the human soul, as in Avicenna), and not the messengers, can perceive the content transmitted by the messengers. Given Avicenna's explicit insistence on substance dualism, the question becomes even more pertinent. Indeed, one of Avicenna's most perspicacious readers, the twelfth-century maverick thinker Abū l-Barakāt al-Baghdādī (d. 1165) claimed that the assumption of really distinct faculties that are responsible for cognitive acts is incoherent, for it leads to two subjects in each activity, namely the faculty whose task it is and the soul that is primarily responsible for it.²⁷ What is more, Abū l-Barakāt grounds his claim on an adaptation of Avicenna's aforementioned argument in *Shifā': Nafs* 5.7, thus suggesting that his view is a natural consequence of Avicenna's own theory. He only takes the argument a step further, saying that the notion of faculty is superfluous, and indeed misguided, for we could do with one soul operating through different organs of the body. If Abū l-Barakāt was on the right track, we could say that Avicenna endorsed and further developed the faculty psychological tradition at a point in which the notion of a distinct faculty had become obsolete. Perhaps he was convinced about this method by the weight of the tradition and by the efforts that commentators like Themistius had invested in its development.

On another note, an interesting point of comparison to the present focus might be Themistius' influence on Averroes, whose painstaking reading of Themistius' and Alexander's interpretations of the material intellect was formative for his own notorious interpretation of a single material intellect for all human beings. What is more, Alexander's "immateriality thesis," which Coda mentions as an important impetus for Themistius' theory of the common sense, was pivotal for Averroes' notion of the spiritual or intentional existence of the perceived forms.²⁸ Perhaps Averroes saw Themistius as an ally in his return to an Aristotelian philosophy purified of the errors of innovators like "Avicenna [...] who changed people's doctrine [...] so much that it became mere opinion."²⁹

²⁶ Think of, for instance, *de An.* 1.4, 408b11–17, where Aristotle says that instead of saying that "the soul pities or learns or thinks," we should rather say "that it is the man who does this with his soul." The terms are different but the underlying idea is similar.

²⁷ Abū l-Barakāt, *Mu'tabar* 2.6.3.4, 2.318–19.

²⁸ See the seminal study in Sorabji 1991.

²⁹ Averroes, *Tahāfut al-Tahāfut* 3, 182.3–4. The writing of this paper was generously funded by the European Research Council (grant agreement no. 682779).

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³⁰The anonymous edition of *Al-Kitāb al-Mu'tabar* has often been ascribed to Şerafettin Yaltkaya, by myself among others, but since he is not explicitly mentioned as the editor anywhere in the three volumes and since there are reasons to believe he in fact was not the editor (see Tunagöz 2017: 197 n.32), I have decided to list this entry under an anonymous editor.

Chapter 9

Sense Perception in Sayf al-Dīn al-Āmidī: A Theologian's Encounter with Avicennan Psychology



Laura Hassan

Abstract Sayf al-Dīn al-Āmidī (d. 631/1233) is an important figure for our understanding of the ways in which the theological tradition of Ash'arism was impacted in the post-classical period by its encounter with Ibn Sīnā's decisive and Islamic reformulation of Peripatetic and Neoplatonic philosophy. The author of works of both *falsafa* and *kalām*, al-Āmidī was well versed in Avicennan philosophy but ultimately a strong adherent of the doctrines of classical Ash'arism. His discussions of the process of vision (*baṣr*) across his theological and philosophical works provide an excellent case study in the interactions of the two traditions in his thought, as well as more generally highlighting the unique aspects of Ibn Sīnā's theory of vision and the ways in which it was received in the centuries after his death.

9.1 Introduction

From the twelfth century onward in the Islamic world, a fully developed and highly singular system of theology—that of the classical Ash'arites—directly confronted a philosophical system which was also historically grounded, thoroughly comprehensive, and, crucially, expressed within the framework of Islamic, Qur'ān-compliant, belief—that of Ibn Sīnā (Avicenna). Post-Avicennan theologians of the Islamic world were faced with an extremely complex web of philosophical dilemmas in the wake of this encounter.¹ These dilemmas led to multiple and diverse transformations,

¹The meeting of the traditions has been fruitful for modern scholarship: appropriately, the majority of scholarly attention to date has been devoted to metaphysical aspects of the reception of Ibn Sīnā; prominently, in Wisnovsky 2004, 2011, Eichner 2007, and Mayer 2003. More recently, aspects of the reception of Ibn Sīnā's natural philosophy have been subject to analysis, in for instance Shihadeh 2014 and Ibrahim 2013a, b.

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developments, and indeed tensions, and to a wide array of philosophical decisions on the part of post-classical Ash'arites. A fruitful approach to charting the intellectual territory of this fascinating period is the problem-based approach of selecting one question which arises in some manner across the divides of *falsafa* and *kalām*, and considering how post-Avicennan theologians dealt with the diversity of materials inherited to develop their own positions on the question. This chapter has an even more limited objective: to chart the developments within just one post-Avicennan theologian's discussions of a single philosophical question, namely the Ash'arite theologian Sayf al-Dīn al-Āmidī's discussions of the process of vision.

9.2 Al-Āmidī's Life and Works

Al-Āmidī's biography invites much scholarly interest precisely because it appears to illustrate something of the manner in which two traditionally inimical intellectual traditions came face-to-face in this significant period.² On the one hand, al-Āmidī was an important exponent of Ash'arite *kalām*, the dominant rational theological tradition of his day; among his epithets is *Ṣāhib al-Abkār*, in recognition of the important accomplishment that is his *summa* of Ash'arite *kalām*, *Abkār al-afkār fī usūl al-dīn*, and it is for his theological and jurisprudential works that al-Āmidī has hitherto primarily been known and revered. On the other hand, he appears to have endorsed the particular brand of Neoplatonism espoused by Ibn Sīnā. As interest in the post-Avicennan period of Islamic intellectual history, and specifically in its Avicennan complexion, rises, al-Āmidī's works of *falsafa* are increasingly discussed.³ The fact that al-Āmidī's was a life fraught with controversy and featured frequent relocation, apparently after his having fallen out of favour with his contemporaries, makes his case intriguing for the scholar of post-classical Islam. A trope which appears in the accounts of several of his biographers, namely that al-Āmidī's itinerant lifestyle was the result of his being hounded for his interest in philosophy, makes his life story more appealing for the scholar of this still obscure period in Islamic intellectual history.

The scholarly consensus is now that it was not for his interest in philosophy alone that al-Āmidī faced difficulties.⁴ This is largely because the trope of the persecuted philosopher no longer rings true to our understanding of the prevalence of

²Goldziher (1916) and Sourdél (1986) took al-Āmidī's biography as testimony of the inimical relationship between theology and philosophy; Brentjes (1997, 2008) and Endress (2006) have offered more nuanced readings of the accounts of al-Āmidī's biographers.

³In, for instance, Gutas 2002: 7; Endress 2006: 408–10; Arif 2010; and Lammer, who discusses al-Āmidī's theory of time (2018), and his doctrine of creation (2017). My own PhD dissertation, shortly to be published under the title *Ash'arism encounters Avicennism: Sayf al-Dīn al-Āmidī on Creation*, analyses the respective Ash'arite and Avicennan influences on al-Āmidī's doctrine of creation (2020).

⁴Endress 2006; Brentjes 2008.

Avicennism across the variety of scholarly circles and institutions of al-Āmidī's day.⁵ Furthermore, I argue elsewhere that a proper understanding of al-Āmidī's own approach to philosophy, in comparison with that of his peers, renders the notion that he was persecuted for his philosophical leanings and their impact on his theology a fallacy.⁶ In this study, by treating al-Āmidī's discussions of one aspect of Ibn Sīnā's psychology, I provide a cross-sectional survey of his intellectual approach which illustrates that he cannot have been persecuted for his interest in philosophy alone.

Al-Āmidī's works of *kalām*, his *Abkār al-afkār fī uṣūl al-dīn* (Unprecedented Thoughts on the Principles of Religion), and the shorter theological manual, *Ghāyat al-marām fī 'ilm al-kalām* (Endpoint of Aspirations in the Science of Theology), post-date his philosophical works. The first of these, *al-Nūr al-bāhir fī l-ḥikam al-zawāhir* (Brilliant Light on Splendid Wisdom), four out of five volumes of which are known to be extant, exhibits a commitment to the doctrines of Ibn Sīnā's philosophical system, and broadly follows the structure of the latter's *Kitāb al-Shifā'*. Despite some controversy about the dating of the work, the date on the available manuscript places this as al-Āmidī's earliest work of philosophy; this is confirmed by analysis of the work's contents.⁷ The work was probably composed during al-Āmidī's time in Baghdād, where the biographical accounts tell us he studied with a group of philosophers in the Karkh district. This is the only one of al-Āmidī's extant works in which he is clearly committed to those doctrines of Ibn Sīnā which can be described as theological; that is, to Ibn Sīnā's conception of the nature of the world's cause (his Necessary of Existence), and to his theory of creation as God's beginningless emanation of existence to the world.⁸ Better known is al-Āmidī's *Kashf al-tamwīhāt fī Sharḥ al-Ishārāt wa-l-tanbīhāt*, his metacriticism of Fakhr al-Dīn al-Rāzī's (d. 606/1210) commentary on Ibn Sīnā's *al-Ishārāt wa-l-tanbīhāt*. Although the work has been cited as an example of al-Āmidī's "mainstream Avicennism," it in fact provides little indication of his own doctrinal commitments at the time of its authorship.⁹ Rather, the work is devoted to highlighting logical errors in al-Rāzī's commentary. Two works which better display al-Āmidī's own developing commitments are his *Daqā'iq al-ḥaqā'iq fī l-ḥikma* (Subtle Truths on Philosophy) and his *Rumūz al-kunūz* (Representing Treasures). Together, these works bridge the period of al-Āmidī's early commitment to Avicennan philosophy and his later promotion of the Ash'arite creed.

⁵ As demonstrated in, for instance, Gutas 2011, Griffel 2011, and Shihadeh 2016.

⁶ In Hassan (2020).

⁷ For discussion of dating, see for instance Arif 2010: 213, and Hassan (2020); in particular, I argue that al-Āmidī does not demonstrate awareness of al-Rāzī's responses to Ibn Sīnā, which suggests, along with the date on the extant manuscript, that the work pre-dates his *Kashf al-tamwīhāt* (discussed below).

⁸ This is not to say that al-Āmidī's *Nūr* is nothing more than a summary of Avicennan philosophy. Al-Āmidī takes a critical approach to, for instance, aspects of the ontology upon which Ibn Sīnā premises his doctrine of creation, including Ibn Sīnā's notion of the ontological realness of possibility (*Nūr*, 5.168–70 and 226–27).

⁹ Gutas 2002: 84.

It is unfortunate that only the opening volume of the *Daqā'iq*, devoted to logic, is extant, in a manuscript which has been digitised at Princeton University. I was able, however, to obtain access to the only known extant manuscript of *Rumūz al-kunūz* present at the Suleymaniye Library in Istanbul.¹⁰ Though the work is short, and often tantalizingly brief in its consideration of major philosophical theories, it is testament to a moment in al-Āmidī's career when he remained open to Ibn Sīnā's ideas and willing to accommodate them as long as they did not compromise any of the key tenets of Ash'arism. In this general approach, the work's agenda appears aligned with that of the *Daqā'iq*, which probably provides more comprehensive discussion of the themes covered. The two works are often cited together in al-Āmidī's later works of theology, for the sake of the interested reader who wishes to better understand the philosophical theories referred to (but almost always refuted) in al-Āmidī's works of *kalām*.¹¹ Telling is the fact that the *Nūr* is never referred to in these later works of *kalām*, most probably because of the clear contradiction between al-Āmidī's theological commitments in these two stages. Nevertheless, analysis of the respective contents of the *Nūr* and *Rumūz* shows that the two works are nearly identical structurally, suggesting that al-Āmidī probably depended, in his more theologically motivated and intellectually innovative *Rumūz*, on the discussions of Avicennan *falsafa* he had compiled in his earlier work.¹² Analysis of the psychological contents of these works, specifically al-Āmidī's discussions of the external faculty of vision (*baṣr*), will illustrate the extent and character of al-Āmidī's Avicennism.

9.3 Discussions of Vision in Ibn Sīnā and Classical Ash'arism

Discussions of sense perception reflect the highly disparate routes along which intellectuals of the classical Islamic world travelled to arrive at points of common interest, armed often with competing theories. In the case of Ibn Sīnā, the discussion of sense perception has as its broadest setting the goal of his philosophy as a whole, which is "to ascertain the realities of all things."¹³ Ibn Sīnā's psychology (in keeping with his Aristotelian heritage), falls within the remit of natural philosophy, a distinct science with its own subject matter, namely, the sensible body considered in relation to the change occurring within it.¹⁴ This makes the goal of natural philosophy for Ibn Sīnā the ascertainment of all realities connected with the body in its being subject to motion. Both the animal and human souls are included within this scope, and

¹⁰ My thanks to Dr. Yakoob Ahmed for his assistance with this.

¹¹ For instance, in discussion of the philosophers' categories of accidents in *Abkār*, 3.10–11.

¹² Accordingly, the missing volume of the *Nūr* probably treats psychological topics.

¹³ Ibn Sīnā, *Madkhal*, 12.

¹⁴ Ibn Sīnā, *Tabī'īyyāt*, 1.1, 7; cf. *Najāt*, 1.121; *Madkhal*, 14.

so the investigation of their faculties is pursued as part of this broader philosophical drive.

In the basic intromissionist standpoint of his theory of vision, Ibn Sīnā concurs, against the Platonist trend, with Aristotle.¹⁵ In general, Ibn Sīnā understands that each of the external sensory faculties receive the forms of their sense objects.¹⁶ In the case of heat, for instance, the sense of touch, which is distributed over the skin and flesh, receives the form of heat from an object external to it. Ibn Sīnā's theories of sense perception are premised on his epistemological theory of form representation (*tamaththul*) and abstraction (*tajrīd*). In the psychological part of the *Shifā'*, before classifying various kinds of perception, Ibn Sīnā makes a general statement that "all perception is taking in the form of the thing perceived (*akhdh ṣūrat al-mudrak*) in some manner."¹⁷ The different levels of abstraction (*aṣnāf al-tajrīd*), pertain to the various ways in which the relevant forms relate to matter.¹⁸ In the case of material forms, perception occurs when a representation (*mithāl*) of the thing sensed (*al-maḥsūs*) is obtained in actuality by the relevant faculty, this being one level at which the form of the thing is received abstracted from its matter.¹⁹ It is rather intuitive that in the case of touch, for instance, something is received by the faculty of touch from without. Ibn Sīnā sets up the case of sight as a more controversial one, but one which does not differ from the process of form impression by which all other sense data are received.²⁰ The controversy relates to a historical debate between proponents of intromissionist and extramissionist models of perception by sight. The former model, closest to our modern understanding of vision, theorises that rays are received from the object of sight into the eye of the perceiver. According to variations of the extramissionist model, maintained among many Platonists including Ptolemy, the eye emits beams to the object.²¹ Ibn Sīnā develops considerable arguments against the extramissionists, occupying much of the third book of the Psychology of his *Shifā'* and also featuring in the *Najāt*, some of which we will encounter in al-Āmidī's *Rumūz*.

Ibn Sīnā departs from Aristotle in aspects of his theory of vision, and specifically, in his theory of light, which he connects closely with his discussion of the faculty of

¹⁵ For a detailed account of Ibn Sīnā's theory of vision, see Hasse 2000: 107–23, and on his understanding of sense perception in general, see for instance Hasse 2001, Sebtī 2005, and McGinnis 2007.

¹⁶ Ibn Sīnā, *Najāt*, 2.6.

¹⁷ Ibn Sīnā, *Kitāb al-naḥs*, 2.ii, 59.

¹⁸ Ibn Sīnā, *Kitāb al-naḥs*, 2.ii, 60.

¹⁹ Ibn Sīnā, *Kitāb al-naḥs*, 2.ii, 63.

²⁰ Ibn Sīnā, *Najāt*, 2.6.

²¹ The two major variations of extramissionism which Ibn Sīnā distinguishes can be ascribed to Euclid and Galen; according to Ibn Sīnā's summary, proponents of the Euclidian variation hold that linear rays go forth from the eyes like a cone, the point of which is the eye and the base of which the object, whilst proponents of the Galenic variation hold that the rays emitted from the eyes connect with luminous air, which becomes the instrument of vision. See Ibn Sīnā, *Kitāb al-naḥs*, 3.v, 113. For discussion, see Hasse 2000: 119–20.

sight.²² For Aristotle, objects are perceived by the eyes when a certain medium intervenes between the object and eye, and when this medium is transparent. The medium itself, for instance, air or water, has only the potential for transparency; when the medium is dark, the transparency has not been actualised and the object of perception is not visible. Thus it is that for Aristotle, light is described as the actualisation of the transparent. By contrast, for Ibn Sīnā, air and water are always actually transparent. When the medium through which the object can be seen is dark, it is not because the transparency of the medium has not been actualised, but because of the absence of light. By Ibn Sīnā's definition of terms, *nūr* is specifically that light which is acquired from a luminous object, as opposed to *ḍau'*, which is the light possessed by luminous objects such as fire and the sun, of themselves.²³ Ibn Sīnā connects this to his theory of colour, arguing that objects whose light is acquired (*mustafād*) possess of themselves (*fī dhātihi*) colours which can be seen, whilst luminous bodies possess luminosity in place of colour.²⁴

Ibn Sīnā's theory of vision is, then, a distinctive development of Aristotle's. Its epistemological and metaphysical context is his theory of forms and their representation and abstraction, and it is because of this context that extramissionist theories of vision are alien to Ibn Sīnā's psychology. Because of the contrary trend among Platonists, much of Ibn Sīnā's focus in discussion of the faculty of vision is on the refutation of extramissionist theories of vision. His discussions of light are also independent of Aristotle and developed in relation to his theory of intromission.

In using the terms 'theology' and 'theologians' of classical Ash'arism, the presence within this tradition of an ontology within which the constituents and workings of both the physical world and of its inhabitants are accounted for—that is, of both natural philosophy and psychology—is initially obscured. Indeed, the presence of extensive physical theoretical discussions by *kalām* theologians has contributed to a scholarly debate over whether the tradition of *kalām* should be considered an independent philosophical tradition in its own right.²⁵ It appears true, however, that the driving agenda of classical Ash'arite *kalām* is a theological one, and that theories concerning the nature of the physical world and of humanity provide the ontological premises for more strictly theological questions.²⁶ Questions relating to sense perception do not constitute an independent sub-field

²² Ibn Sīnā, *Kitāb al-naḥs*, 3.i–iii. Hasse draws our attention to the non-Aristotelean aspects of Ibn Sīnā's theory of vision, especially Ibn Sīnā's insistence that light is independent of the translucent medium, in Hasse 2000: 107–23, and the following discussion depends on his reading of Ibn Sīnā.

²³ Ibn Sīnā, *Kitāb al-naḥs*, 3.i, 91. For a discussion of the most appropriate English translations of the terms as defined by Ibn Sīnā, see Hasse 2000: 108–9.

²⁴ Ibn Sīnā, *Kitāb al-naḥs*, 3.iii, 106.

²⁵ Dhanani describes *kalām* as a “philosophical metaphysics” to rival that of the *falāsifa* (1994: 2–3), as does Sabra 2006, whereas Frank maintains that “the primary function of *kalam* [...] is to rationalise the basic beliefs of the Muslims as they are given in the Koran and the Sunna” (1992: 22), and Shihadeh also emphasises the primacy of the theological objectives of *kalām* (2005: 144).

²⁶ I demonstrate this in relation to the role of physical theory in works of classical Ash'arism in Hassan (2020). It may well be that Mu'tazilism and Ash'arism ought to be differentiated with regard to this question.

within the tradition but arise in a range of theological contexts. Furthermore, questions of sense perception which do not impinge on or bolster theological doctrines are not generally treated. The major relevant contexts for the discussion of perception are demonstrations that God perceives (*ithbāt al-idrāk lillāh*), and specifically that He has attributes of vision (*baṣr*) and hearing (*samʿ*), and the question of whether or not God can be seen, a major point of theological interest because of Qurʾānic suggestions of the possibility.²⁷

Al-Āmidī's ultimate commitment is to the theological doctrines of the classical Ashʿarites. Yet equivalent materials within manuals of Muʿtazilism, the classical Islamic world's other major school of rational theology, are an essential context, since al-Ashʿarī developed his theological system in direct response to that school. Al-Ashʿarī records al-Nazzām's (d. c. 230/845) theory of vision in his *Maqālāt*. Al-Nazzām denied the existence of a capacity called vision on the part of the perceiving agent. Rather, he claimed that the visible property of an object leaps into its perceiver, interpenetrating the agent.²⁸ Despite the apparent similarity with Aristotle's intromissionist theory of vision (at least in contrast with the extramissionist alternative), al-Nazzām's own theory of vision concurs with his physical theory more generally.²⁹ Its theoretical context is al-Nazzām's notion that the world is entirely constituted of interpenetrating property-bodies—a theory against which later theologians reacted by the adoption and development of their version of atomism. In the case of vision al-Nazzām's theory of interpenetration (*mudākhala*) is applied to mean that the property-body which is the colour of the visible object intermingles with the spirit (*rūh*) of the perceiving agent. There does not appear to be any notion here of rays entering the eye of the perceiver (as in Aristotle and Ibn Sīnā's intromissionism); as David Bennett notes “the only bodies involved are the spirit and the visible body.”³⁰

As in so many areas of physical theory, al-Nazzām's notion of vision is at odds with that of later Muʿtazilites. The generally endorsed theory of classical Muʿtazilism is extramissionist. In his *Tadhkira*, Ibn Mattawayh records for his school the following position on the perception of visible objects (*al-marʿiyyāt*):

the condition[s] for the perception [of such objects] by the eye are: that the sense [of sight] be sound; that the opening [of the eyes] occurs; that the object of sight is present, and that obstacles are removed. And the soundness of the sense [of sight] entails that rays are emitted from a [given] point of view (*nuqtat al-nāzir*).³¹

²⁷ On God seeing and hearing, e.g. Ibn Fūrak, *Mujarrad*, 44. On seeing God, e.g. Ibn Fūrak, *Mujarrad*, 81–83; al-Juwaynī, *Irshād*, 166–81.

²⁸ Al-Ashʿarī, *Maqālāt*, 384. The term ‘property-bodies’ is coined by Bennett (2011), who offers the fullest reconstruction of al-Nazzām's physical theories. See especially 80–85 on al-Nazzām's theory of vision in its theoretical context.

²⁹ See van Ess 2016: 417–20 and 428–33, for the origins of al-Nazzām's theory of interpenetration (*mudhākala*) in the thought of the early Imāmī theologian Hishām b. al-Ḥakam (d. 179/795–96).

³⁰ Bennett 2011: 81.

³¹ Ibn Mattawayh, *Tadhkira*, 2.719.

A variety of discussions on vision ensue; Ibn Mattawayh records a debate over the Aristotelian position that the transparent medium of air must intervene as a medium between perceiver and object of perception, and for his part asserts that such a medium is not a condition for vision, on the basis that our eyes perceive darkness which is nothing more than “air devoid of light.” If air were a necessary medium for the perception of darkness, we would need to posit air supervening between the beholder and the dark air beheld.³² The history of this position is interesting. For our purposes, however, it is the response of the Ash‘arites to extramissionism as received from the classical Mu‘tazilites that concerns us in relation to al-Āmidī.

Al-Ash‘arī (d. 324/936) leads his school in rejecting any account of vision which makes our ability to see dependent on anything beyond the direct and ongoing creative power of God. The conditions of vision posited by the Mu‘tazilites are from an ontological point of view secondary causes (*ashbāb*) of the occurrence of vision. Al-Ash‘arī’s theory of vision is part of his wholesale rejection of any kind of secondary causality. Typically of al-Ash‘arī’s works, in his *Kitāb al-Luma’*, the discussion of vision occurs only in the strictly theological context of establishing that God sees. Here, al-Ash‘arī’s simple contention is that since the presence of life and the absence of impediments to perception are the only requisites to the presence of sight, God must see.³³

Ibn Fūrak (d. 406/1015) provides a fuller account of aspects of al-Ash‘arī’s theory on vision in his *Mujarrad Maqālāt al-Ash‘arī*. He states that al-Ash‘arī held that atoms are perceived by touch or sight and accidents by the appropriate sense out of sight, touch, smell, taste, or hearing. Yet he also states that al-Ash‘arī held to the possibility of every existent being perceived by sight and hearing.³⁴ Al-Juwaynī (d. 478/1085) is clear in his explication of al-Ash‘arī’s position (which he endorses) that it entails that accidents of perception are not by necessity associated with concomitant categories of objects of perception; scents, for instance, are not by necessity objects of accidents of smell, nor colours of accidents of sight. Instead, according to the customary course of God’s action, colours are seen and sounds heard, scents are smelt and tastes tasted—but the only condition of the perception of an object by any of the senses is that it exist.³⁵ The theological motivation behind this theory is the Ash‘arite belief that God, though he is not body nor substance, can be seen.³⁶

Al-Ash‘arī unsurprisingly strenuously denies the conditions for vision maintained by many classical Mu‘tazilites, both those external to the perceiver (among which, the presence of colour, the object of perception being within visible range,

³² Ibn Mattawayh, *Tadkhira*, 2.726.

³³ Al-Ash‘arī, *Kitāb al-Luma’*, 25.

³⁴ Ibn Fūrak, *Mujarrad*, 40.

³⁵ Al-Juwaynī, *Irshād*, 174, 177.

³⁶ Al-Ash‘arī also held that it is within God’s power to “create in our midst individuals and sounds for which he has not created within us concomitant accidents of perception,” which is to say that angels (for instance) qua existents are correctly described as visible; they are only not seen because of God’s decision not to create vision of angels in human agents (Ibn Fūrak, *Mujarrad*, 85).

and the object being of sufficient density), and those concerning the state of the perceiver, including the emission of rays of sight from the eyes. Additionally, al-Ash'arī denies the necessity of any particular configuration (*bīnya makḥṣūṣa*) of atoms in the perceiver. This entails a denial of the necessity of the eye as the organ of sight; rather, the accident of vision exists in a single atom, and it is possible that it could exist in such an atom in complete isolation from any other atom, allowing that single atom to see itself.³⁷

Within the Ash'arite version of the atomist ontology of *kalām*, vision, though it is an eternal attribute in the case of God, and a temporally originated accident in the case of man, must be defined identically in both cases in a manner which preserves God's exclusive autonomy in every single event.

9.4 Twelfth and Thirteen Century Responses to Ibn Sīnā on Vision

Intellectuals of al-Āmidī's era, then, inherited highly distinctive and obviously contradictory theories of vision. Post-classical Ash'arite discussions of this topic offer an insight into their authors' approaches to the integration or otherwise of Ibn Sīnā's thought on psychological questions which do not directly undermine the credal tenets of classical Ash'arism.

Before tracing the evolution of al-Āmidī's positions on vision, it is necessary to consider how his most significant predecessor, al-Ghazālī (d. 505/1111), and his contemporary, Fakhr al-Dīn al-Rāzī (d. 606/1210), approach the matter, especially since, as we shall see, aspects of al-Āmidī's approach arise in direct response to that of al-Rāzī. As Ayman Shihadeh has argued, al-Ghazālī is a theological pragmatist in his approach to the integration of *falsafī* theories and demonstrative methods into *kalām*.³⁸ His *Tahāfut* is of course the clearest testament to those aspects of philosophy which he rejects—most prominently, the philosophical doctrine of eternal emanation, in light of his insistence that God must be ascribed agency as understood among the classical Ash'arites.³⁹ Yet implicitly and sometimes also explicitly, the work also indicates al-Ghazālī's accommodation of aspects of Avicennan *falsafa*. The eighteenth discussion in the work contains an accurate summary of Ibn Sīnā's

³⁷ Ibn Fūrak, *Mujarrad*, 83. Related to this is al-Ash'arī's anthropology, which is founded on a denial of any genuine unity aside from God; all other beings in existence are in fact no more than a configuration of atoms and their inherent accidents. As such, though the human is defined in relation to the particular configuration of atoms by which the recognisable form of human comes about, this describes a phenomenon, and not a real unity. The presence of life is not dependent upon this configuration of atoms any more than the presence of vision is dependent upon the configuration of atoms in the eye. See Shihadeh (2012) for a study of classical Ash'arite anthropology.

³⁸ Shihadeh 2005: 146–48.

³⁹ Al-Ghazālī famously proclaims belief in an eternal world among three counts upon which its proponents should be deemed apostates (*Tahāfut*, 7 and 226).

psychology, focussing almost exclusively, however, on the internal faculties.⁴⁰ Subsequent to his summary, al-Ghazālī states that “there is nothing in what they have mentioned that must be denied in terms of the religious law. For these are observed matters which God has ordained to flow according to habit.”⁴¹ Though he goes on to deny Ibn Sīnā’s ability to demonstrate the immateriality of the human soul in relation to his theory of the estimative faculty (*wahm*), the statement just cited signifies his broad concession to the religious admissibility of Ibn Sīnā’s psychology, though not to its validity.⁴²

Al-Ghazālī also demonstrates knowledge of Ibn Sīnā’s theory of vision in a separate theological context, namely in the course of disputing Ibn Sīnā’s notion that God knows all things in a universal way. One argument employed by al-Ghazālī analogises from Ibn Sīnā’s theory of vision to argue that God’s knowledge of particulars is not against the philosophers’ own principles. Specifically, he cites Ibn Sīnā’s claim that the positioning of a coloured body in front of the eye of its perceiver is the cause of the impression of the image of that body on the eye. Observing that in this case, an inanimate body is a cause of vision, al-Ghazālī argues that the philosophers cannot exclude God’s knowledge of particulars on the basis that it entails that one thing be the cause of change in something else (in this case, a temporal occurrence causing knowledge in God).⁴³ Here, Ibn Sīnā’s theory of vision is no more than a tool, picked from his philosophical system and wielded against him in attack on a topic with far greater ramifications for al-Ghazālī’s vision of God’s nature.

Thus it is that al-Ghazālī is little interested in Ibn Sīnā’s theories of the external senses for their own merit. Rather, as is his stated intention in this work, al-Ghazālī is a theological pragmatist, isolating an aspect of Ibn Sīnā’s theory which threatens to undermine Ibn Sīnā’s confidence in his own, theological, theory of the soul’s independence of the body. A similar attitude towards aspects of natural philosophy which have little theological bearing is evidenced in other works: in his *Munqidh*, al-Ghazālī specifically criticises the theologians for having thought they were defending the faith by investigating “the realities of things,” delving into the investigation of “substances, accidents and their properties” without it being relevant to their theology.⁴⁴ In his *Iqtiṣād*, he describes physical theory for its own sake as being “extraneous to the [main] objective” of the work.⁴⁵

⁴⁰ Al-Ghazālī, *Tahāfut*, 178–81.

⁴¹ Al-Ghazālī, *Tahāfut*, 181.

⁴² Al-Ghazālī, *Tahāfut*, 182–83. For discussion of al-Ghazālī’s denial of the need to posit an estimative faculty, see Black 1993.

⁴³ Al-Ghazālī, *Tahāfut*, 142. This is just one disjunct in a lengthy disjunction *ad absurdum* in which al-Ghazālī also establishes his more contentious claim that change in God is not against the principles of the philosophers.

⁴⁴ Al-Ghazālī, *Munqidh*, 33.

⁴⁵ Al-Ghazālī, *Iqtiṣād*, 28. See Nakamura 1993: 13–20 on al-Ghazālī’s position on atomism and its relation to his theory of the soul.

Al-Rāzī's discussions of vision across his works deeply contrast with those of al-Ghazālī. It is now rather well understood that al-Rāzī is a pivotal figure in the reception of Avicennan *falsafa* into Ash'arite *kalām*, and his treatment of vision illustrates the comprehensiveness of his philosophical project. Unlike al-Ghazālī, al-Rāzī appears to have a genuine interest even in topics with no clear theological bearing. And whilst the influence of Ibn Sīnā is keenly felt in al-Rāzī's discussions of vision, he is no imitator of his predecessor but an independent philosopher with his own approach.⁴⁶ Al-Rāzī treats vision in several of his works. In those works in which the focus is the explication and assessment of Avicennan philosophy (including the *Mabāḥith*, *Mulakhkhaṣ* and his *Sharḥ al-Ishārāt*), al-Rāzī assesses the available theories of vision. Following Ibn Sīnā, he identifies three theories in circulation, two of which are distinct versions of an extramissionist theory of vision, the third of which is Ibn Sīnā's intromissionist point of view. For his part, however, he argues that these theories do not exhaust the possibilities; rather, as he claims in the *Sharḥ*, "vision is not an impression, but a relation (*nisba idāfiyya*), which obtains between the faculty of sight and the object of perception when the necessary conditions are met."⁴⁷ We will come across details of this discussion in relation to al-Āmidī's reception thereof in the *Kashf*.

In his theological works, al-Rāzī shows a degree of pragmatism with respect to the discussion of vision. Yet his pragmatism is not in the manner of al-Ghazālī's. In his *Kitāb al-Arbaʿīn*, where al-Rāzī's agenda is set by the topics of classical Ash'arism, he treats vision in the course of demonstrating God's attribute of sight. Here, he does not insist on his school's understanding of the capacity to see as attributable to all living beings and conditioned only on the presence of life. Yet neither does he, like al-Ghazālī, casually accommodate Ibn Sīnā's theory of vision as non-impinging on dogmatic tenets of theology. Instead, he presents a brief refutation of the notion that vision is the process of the impression (here, *ta'thīr*) of the sense object (*al-maḥsūs*) upon the sense, with the primary intention of undermining the notion (attributed to "the philosophers") that vision, being such an impression and therefore an attribute of body, cannot occur in the case of the immaterial God.⁴⁸ In this context, al-Rāzī is not concerned with refuting the extramissionists, since their notion of vision is not problematic in the case of God who sees, nor with expressing an independent opinion on the subject of vision.⁴⁹

⁴⁶ Ibrahim treats al-Rāzī's discussions of vision in his doctoral thesis in relation to his reception of Ibn Sīnā's epistemic principles. He argues convincingly that al-Rāzī was aware of and incorporating aspects of Ibn al-Haytham's (d. 430/1039) optics. See Ibrahim 2013a, Chapter 6, especially 300–314.

⁴⁷ Al-Rāzī, *Sharḥ*, 2.313. His *Mabāḥith* and *Mulakhkhas* treat vision independently of critique of Ibn Sīnā's theory. See Ibrahim's discussion in 20132013b: 307–12.

⁴⁸ Al-Rāzī, *Arbaʿīn*, 1.237–38.

⁴⁹ An equivalent approach (in terms of the theological focus of al-Rāzī's discussion of vision) is to be found in the *Maṭālib* (volume 3). Here, al-Rāzī offers arguments against the notion of form impression (3.187–88), but then provides arguments to the effect that form impression is distinct from perception (3.188–89). However, the primary focus is not on explicating the process of vision in humans, but on its relationship to the case of God, and al-Rāzī focuses on arguments for God's vision.

Al-Rāzī, then, approaches the discussion of vision distinctly according to the project of each of his works. He is philosophically independent from Ibn Sīnā but also from the tradition of classical Ash'arism. He formulates his own theory of vision, and expresses this clearly in works whose remit entails a more comprehensive philosophical quest for knowledge of all reality. Elsewhere, where his focus is on key theological doctrines, al-Rāzī's discussion of vision is subsumed to this goal, without being transformed. That is to say that whilst al-Rāzī obviously maintains his critique of Ibn Sīnā's intromissionism, this does not find expression except with the limited objective of establishing that Ibn Sīnā's objection to God's possessing vision does not stand. Yet al-Rāzī appears to feel no compulsion to defend the Ash'arite concept of vision in man as a directly created accident, nor of vision in God as an attribute consequent only to His life. He willingly departs from the limiting theocentrism of his school in this question.

9.5 Al-Āmidī on Vision

I turn finally to al-Āmidī's discussions of vision. Because of the great variation between his approaches to the topic, it is best to treat each work separately. Al-Āmidī's philosophically-oriented works are not innovative in their discussions of vision, but they are an important context to the later discussions of his works of theology, and so they will be treated first. It will become clear that the issue of how best to approach those aspects of Avicennan philosophy which are not inherently theological is far from a settled question for al-Āmidī.

9.5.1 *Kashf al-Tamwīhāt and Rumūz al-Kunūz*

As mentioned above, the *Kashf* is a generous witness of al-Āmidī's encounter with al-Rāzī's reception of Ibn Sīnā. Predating al-Āmidī's works of *falsafa* and *kalām* except his *Nūr*, and written in the context of competition for scholarly patronage, the work testifies both to al-Āmidī's close knowledge of al-Rāzī's views on Avicennan philosophy, and to his strident intellectual opposition to his peer. The discussion of vision exemplifies al-Āmidī's approach.

Al-Rāzī addresses Ibn Sīnā's theory of vision in commenting on the discussion in the *Ishārāt* on what perception constitutes (*māhiyyat al-idrāk*). In the *Ishārāt*, Ibn Sīnā posits that: "the perception of the thing is [this]: that the reality (*ḥaqīqa*) [of the

thing] be represented (*mumaththala*) in the perceiver (*al-mudrik*).”⁵⁰ Al-Rāzī presents a multi-faceted analysis and critique of Ibn Sīnā’s theory, addressing the two major claims which he deems to lie behind Ibn Sīnā’s statement. The first is that perception only occurs upon the obtainment within the perceiver of the reality of the thing represented; the second, that perception itself is identical with (and not an occurrence pursuant from or conditional upon) the obtainment within the perceiver of this reality.⁵¹

Al-Āmidī focuses particularly on two main parts of al-Rāzī’s discussion. In the first, al-Rāzī records and discusses a variety of historical objections to the notion that perception depends upon the obtainment within the perceiver of something of the reality of the thing perceived.⁵² In the second, al-Rāzī offers an original critique of the notion of form representation.⁵³ Al-Āmidī does not distinguish between the two different levels of commentary.

In citing historical proofs, al-Rāzī treats both proofs which undermine the general theory of sense perception through impression, and those specific to the different kinds of perception. Under the category of proofs “which establish that vision does not require the impression of the forms of the objects seen,” al-Rāzī lists proofs derived from various proponents of extramissionist theories of vision. One proof relates to the scale of an object and its perceiver. The argument goes: it is possible for the human to see an entire hemisphere (*nuṣf kurat al-‘ālam*) (i.e. when looking up at the sky). But it is impossible for something large to be impressed upon something small.⁵⁴ Al-Āmidī is little interested with the details of the arguments, since he believes that such objections are resolved by a correct understanding of what Ibn Sīnā means when he refers to the obtainment in the perceiver of the representation of what is perceived. He argues that objections to any aspect of Ibn Sīnā’s theory of perception premised on the impossibility of something large being impressed upon something small fail. This is because the impossibility

is only entailed if that which is impressed (*al-munṭabī‘*) within the body [e.g. within the faculty of sight] is the reality of the external size [of the object of perception] (*ḥaqīqat al-miqdār al-khārij*) but this is not the case. Rather, that which is impressed is nothing other than the representation (*mithāl*) [of the object of perception].⁵⁵

⁵⁰ Ibn Sīnā, *Ishārāt*, 2.3.7, 359; al-Rāzī, *Sharḥ*, 2.216–36 contains al-Rāzī’s response, and *Kashf*, f. 87b–100b is al-Āmidī’s rejoinder. For an excellent discussion of al-Rāzī’s commentary on this section in relation to his critique of other aspects of Ibn Sīnā’s epistemology, see Ibrahim 2013a: 293–305.

⁵¹ Al-Rāzī, *Sharḥ*, 2.217–18. This method, of determining first the theoretical claims of the *Ishārāt*, then treating each in turn, is typical of his approach in the work. Shihadeh (2016) and Wisnovsky (2013) have recently challenged the traditional assumption (based on al-Ṭūṣī’s comments) that al-Rāzī’s commentary on the *Ishārāt* is in fact an attack (see e.g. Endress 2006: 408; Heer 1992: 111; Gutas 2002: 89). Shihadeh’s analysis of the structure of al-Rāzī’s *Sharḥ* demonstrates the numerous exegetical functions served by the text.

⁵² Al-Rāzī, *Sharḥ*, 2.219–26.

⁵³ Al-Rāzī, *Sharḥ*, 2.234.

⁵⁴ Al-Rāzī, *Sharḥ*, 2.224–25.

⁵⁵ Al-Āmidī, *Kashf*, f. 96b.

Al-Āmidī generally insists that nothing is lacking in Ibn Sīnā's theory of representation.⁵⁶ In opening his discussion, al-Rāzī comments that according to Ibn Sīnā, "perception does not obtain except when the reality of the object of perception is obtained within the perceiver ('and *ḥusūl ḥaqīqat al-mudrak fī 'l-mudrik*')." ⁵⁷ In developing one proof against form impression in general, al-Rāzī problematises the notion of representation by arguing that the reality (*ḥaqīqa*) of what Ibn Sīnā describes as the "representation" and "form" of the object of perception must either be the reality of that object of perception, or other than it. Using the example of rotundity from the original proof, al-Rāzī thus argues that if the reality of representation of rotundity obtained in the perceiver is the reality of rotundity itself (*ḥaqīqatuhu ḥaqīqat al-istidāra*), the perceiver must become rotund, since "there is no meaning to round (*mustadīr*) except that in which rotundity is obtained." But if other than rotundity itself, then the perception of rotundity does not entail the obtainment of rotundity.⁵⁸

Al-Āmidī takes al-Rāzī's development of a historical argument as al-Rāzī's own point of view, and objects to its logic. He holds that the representation of rotundity is not identical to rotundity itself, asking: "the representation (*mithāl*) of the thing and its image (*shabah*)—how [is it that these] are the reality of that thing?" ⁵⁹ And if, argues al-Āmidī, the representation of the thing is not the thing itself, this only entails that the thing itself is not obtained in its perceiver, but Ibn Sīnā has only maintained that the representation of the thing is obtained.⁶⁰ However, as is clear from al-Rāzī's probing of what Ibn Sīnā means by representation, it is precisely this distinction in which al-Rāzī is most interested. He is concerned with demonstrating that Ibn Sīnā has not sufficiently explicated how the essence of the thing relates to its representation. This means that his claim that Ibn Sīnā's theory demands that perception occurs upon the obtainment of the reality of the object of perception within the perceiver is not an oversight, as al-Āmidī seems to imply. Rather, it is a significant philosophical criticism.

Throughout his meta-criticism, al-Āmidī offers no comment on al-Rāzī's positive statement on vision as a relational state obtaining between the perceiver and object of sight. Yet despite the lack of positive philosophical content in al-Āmidī's treatment of Ibn Sīnā's theory of vision and its reception by al-Rāzī, the *Kashf*

⁵⁶ For Ibn Sīnā's theory of representation, see his *Kitāb al-burhān*, 3.v (for an epistemological outline) and his *Kitāb al-naḥs*, 2.ii (on the various gradations of abstraction). See Sebtī 2005 on the ontological status of the image in Ibn Sīnā's thought, and Hasse 2001 and McGinnis 2007 on Ibn Sīnā's theory of abstraction in connection to his theory of emanation. McGinnis also provides translations of key Avicennan texts on abstraction.

⁵⁷ Al-Rāzī, *Sharḥ*, 2.217.

⁵⁸ Al-Rāzī, *Sharḥ*, 2.219–20.

⁵⁹ Al-Āmidī, *Kashf*, f. 95a.

⁶⁰ E.g. Ibn Sīnā, *Kitāb al-naḥs*, 3.vii, 137.

demonstrates his awareness of both, and is therefore important background to his discussions in his later works.⁶¹

In its extant volumes, the structure of al-Āmidī's *Rumūz al-kunūz* is identical to that of his earliest work of philosophy, *al-Nūr al-bāhir*, and yet, by the time of his composition of the *Rumūz*, al-Āmidī demonstrates a fast commitment to the most prized doctrines of classical *kalām*, including the world's creation *ex nihilo*. The manner in which al-Āmidī approaches Ibn Sīnā's psychology in the *Rumūz*, however, is illustrative of the intellectual project of the work, namely, to demonstrate the basic compatibility of *falsafa* and *kalām*.

Al-Āmidī commences the psychological part of the work without comment on its relation to the psychological contents of *kalām*. His introductory comments to the work as a whole guide the reader's expectations with regard to the psychology that will be discussed. There, al-Āmidī explains that his purpose in the work is to provide a concise but accurate summary of the teaching of the "Metaphysicians" (*al-ʿulamāʾ al-ilāhiyyīn*). The importance of the work, al-Āmidī stresses, is that certain contemporaries have let a preoccupation with the fantastic sounding terminology of the philosophers distract them from attention to matters of the revealed law.⁶² This recalls precisely the introduction to the *Daqāʾiq*, where al-Āmidī also states that many parts of *falsafa*, including most of its logic and natural philosophy, as well as aspects of its metaphysics, do not contradict the sound doctrine of "the Muslims."⁶³ It is nowhere clear whether or not al-Āmidī is concerned with the validity of those theories which are not theologically contentious. He certainly does not appear to offer original criticism of Ibn Sīnā's opinions in such areas. Rather, he summarises without commentary, only offering critique where something is very obviously at stake from a theological perspective. It is difficult to ascertain al-Āmidī's own views on psychological matters in this context, because this is not his objective.

Al-Āmidī follows Ibn Sīnā in treating vision as one of five external faculties. The content of the discussion of vision reflects that of Ibn Sīnā's *Shifāʾ* and *Najāt*. Al-Āmidī defines sight (*baṣr*) as the faculty located in the hollow nerve in the eye, the function of which is "to perceive the images (*ashbāḥ*) of bodies and colours which are impressed on the crystalline humour (*al-rutūba al-jalīdiyya*) by the medium of the transparent." He places some stress on explicating the necessity of the presence of the transparent medium, before refuting an alternative conception of the transparent. Al-Āmidī cites the opinion that "there is no colourless body; those bodies which do not veil that which is behind them [are so] because of the multitude of outlets (*kuthrat al-manāfidh*)."⁶⁴ This opinion is discussed by Ibn Sīnā in his *Shifāʾ* in the course of his treatment of theories of colour and its origination, the

⁶¹ I explore the socio-political background to al-Āmidī's approach in the *Kashf* in a forthcoming paper.

⁶² Al-Āmidī, *Rumūz*, f. 1b.

⁶³ Al-Āmidī, *Daqāʾiq*, f. 1b. Al-Ghazālī makes a similar distinction between aspects of the philosophical tradition that present no challenge to sound doctrine, and those which must be rejected (*Tahāfut*, 5–7).

⁶⁴ Al-Āmidī, *Rumūz*, f. 88a.

fourth of the eight sections in which Ibn Sīnā expounds his theory of vision and refutes alternatives.⁶⁵ Al-Āmidī's response to the opinion is even more terse than his summary—he simply notes that “this entails the existence of void [space], and this is impossible.”⁶⁶ This is a condensed summary of Ibn Sīnā's own far more expansive refutation of the opinion.⁶⁷

The brevity of al-Āmidī's treatment of an alternative conception of transparency, and of Ibn Sīnā's response demonstrates that his goal in this part of the work is neither to engage philosophically with the variety of theories of vision nor even to comprehensively represent Ibn Sīnā's own philosophical engagements. Strikingly, al-Āmidī fails to acknowledge the connections with the theory of colour maintained among the theologians. Colours, according to Mu'tazilites and Ash'arites alike, are accidents, and for classical Ash'arites, no colourless bodies exist. In demonstrating that substance cannot be devoid of any class of accidents or its contrary, al-Juwaynī argues against the existence of colourless bodies, specifically treating the cases of water and air. In the case of air, al-Juwaynī cites two positions; either air is not perceived at all (*ghayr mudrik*), or it is perceived, and is white in colour in daylight, but black in colour in darkness (al-Juwaynī's own opinion). In either case, al-Juwaynī argues, air can be said to possess accidents of colour, since even if an accident of perception is not created for the colour of air, this does not entail the absence of colour.⁶⁸ Al-Āmidī, even where he cites an opinion with connections to that of the classical Ash'arites, does not acknowledge the presence within *kalām* of such discussions. Though he sets out to demonstrate the compatibility of *kalām* and *falsafa*, al-Āmidī does not seek to bring the ontologies and psychologies of both into real contact. Where no direct theological compromise is entailed by the teachings of Ibn Sīnā, al-Āmidī is little concerned, in this work, with the ways in which Avicennan philosophy impinges upon the physical and psychological theories of classical *kalām*.

Much of the subsequent discussion is occupied with al-Āmidī's record of Ibn Sīnā's arguments in refutation of extramissionism and defence of intromissionism. In all this, there is little indication of al-Āmidī's encounter with al-Rāzī's reception of Ibn Sīnā's theory of perception as witnessed in the *Kashf*. The only indication of that background is a discussion al-Āmidī includes in which he stresses that the impression of the forms of objects on the lens “does not entail that anything of the object of vision [is transferred] to the faculty of vision.” Rather, it is only the likeness (*shabah*) of the object perceived which is impressed.⁶⁹ This does not go beyond Ibn Sīnā's own statements, but its inclusion may reflect the background of al-Āmidī's

⁶⁵ Ibn Sīnā, *Kitāb al-naḥs*, 3.iv, 105.

⁶⁶ Al-Āmidī, *Rumūz*, f. 88a.

⁶⁷ Ibn Sīnā, *Kitāb al-naḥs*, 3.iv, 111–12.

⁶⁸ Al-Juwaynī, *Shāmil*, 214.

⁶⁹ Al-Āmidī, *Rumūz*, f. 88b

encounter with al-Rāzī's critique.⁷⁰ Overall, here in the *Rumūz* al-Āmidī is a pragmatist, freely explicating Ibn Sīnā's theory of vision, since it does not, to his thinking at this stage in his career, threaten the foundational tenets of the theological tradition with which he now proclaims allegiance.

9.5.2 *Abkār al-afkār and Ghāyat al-marām*

In al-Āmidī's theological works, there is a radical inversion of his approach to Avicennan *falsafa* in the *Rumūz*. Where there he was accommodating, here he is strongly opposed to that system of thought, reactionary and conservative in his adherence to the norms of classical Ash'arism. I show in my monograph that despite his general opposition to both the philosophers and to those he believes to have strayed too far into their ways, al-Āmidī is in fact deeply influenced by his exposure to Ibn Sīnā in several respects. In relation to the discussion of perception, however, the imprint of *falsafa* on al-Āmidī's thought is felt primarily in his opposition to Ibn Sīnā's theory of vision.

One of the ways in which post-classical Ash'arism bears the mark of its encounter with Avicennism is in the restructuring of theological *summae* to reflect the philosophical concerns of Ibn Sīnā. Heidrun Eichner has shown the importance of al-Rāzī for this development in relation to the disentanglement of the discussion of general metaphysical questions, among later Ash'arites, from theology proper.⁷¹ Another feature of later *summae*, also innovated by al-Rāzī, is the isolation of natural philosophy from theology proper. This allows later Ash'arites to treat questions pertaining to the physical world in a more comprehensive manner than their classical predecessors, and also for free and serious engagement with a variety of different natural philosophies.⁷² Al-Ījī's enduringly influential *Mawāwif* is a prime example. In the fourth *mawqaf*, al-Ījī treats "Substance (*al-jawhar*).⁷³ Within this, following Ibn Sīnā, the discussion of the human soul and of sense perception occurs.⁷³ I discuss elsewhere the fact that al-Āmidī extricates the discussion of the physical world from his discussions of the deity in his *Abkār*, treating the former

⁷⁰ In al-Āmidī's discussion of God's attributes in this work (a context in which perception is normally discussed in works of *kalām*) he summarises Ibn Sīnā's arguments against God's having attributes additional to his essence, then offers objections to the premises of these arguments. Discussion of perception does not arise. As elsewhere, in his focus on determining the theologically admissible and inadmissible aspects of Avicennan philosophy, and on undermining the latter, al-Āmidī does not bring the two traditions into real engagement with one another (*Rumūz*, f. 109a–110a).

⁷¹ Eichner 2007, especially 150–54.

⁷² On this, see Hassan 2020. Despite the separation of major theological (*jalīl*) and 'subtle', non-theological (*daqīq*) questions in al-Ash'arī's *Maqālāt*, all the major manuals of classical Ash'arism overtly subsume the discussion of the physical world under the defence of theological doctrine.

⁷³ Al-Ījī, *Mawāwif*, 229–42.

under the category ‘the Possible Existent’, and the latter, ‘the Necessary Existent’. Yet unlike al-Rāzī and those who followed him, al-Āmidī is conservative in treating only the standard physical theoretical topics of classical Ash‘arism. As a result, though Ibn Sīnā’s alternative theories arise often and are strongly contested, al-Āmidī’s discussions of Avicennan philosophy are restricted to standard *kalām* contexts, and this often precludes genuine engagement with the points of difference between the theories at hand.

Avicennan psychology is not, then, treated as a sub-field of natural philosophy, as in al-Ijī’s *Mawāqif*, but arises only as an alternative to sound doctrine in the standard classical Ash‘arite contexts for the discussion of sense perception. It is discussion of “the location of the created accident of knowledge and of its non-endurance” which provides a focus for al-Āmidī’s summary of Ibn Sīnā’s theories on sense perception—and for their subsequent refutation. Al-Āmidī’s expression of Ibn Sīnā’s theory of vision here in the *Abkār* is worded similarly to the equivalent section in the *Rumūz*, where, however, we have seen that he offered no objection. He writes that according to the philosophers, the location of knowledge of particulars is “corporeal faculties inhering within specific parts of the body,” vision being “an expression of a faculty located in the hollow nerve of the eye, the function of which is to perceive the images of luminous or illuminated coloured bodies impressed on the lens by way of a transparent medium.”⁷⁴ Here in the *Abkār*, al-Āmidī denies that any “particular structure (*binya makḥṣūṣa*)” is requisite to sense perception; “rather, each atom of the atoms of the human body, should [an accident of] perception or knowledge inhere within it, is perceptive and knows by [means of that accident].”⁷⁵ This amounts to an outright denial of any explanation of sense perception—vision or otherwise—which goes beyond the direct creative power of God. It is precisely the occasionalism of al-Ash‘arī.

Elsewhere, in establishing the permissibility of seeing God, al-Āmidī again argues for the classical Ash‘arite conception of vision. Inherent to this is opposition to both Ibn Sīnā’s intromissionism and the extramissionism of the Mu‘tazilites. He states his position:

perception by seeing is not by the emission of anything from the [faculty of] vision to the object of vision, nor by the impression of the form of the object of vision in the [faculty of vision], nor does it depend upon reflection, nor the contact of bodies, nor upon a particular [bodily] structure. Rather, it is a *ma‘nā* which God creates in the particular senses according to the course of his habit, and should God create perception in the heart, or in any other [bodily] organ, this would be permissible.⁷⁶

The term *ma‘nā* infamously resists translation, yet al-Āmidī’s use of the term here reflects the standard Ash‘arite conception of the process by which God creates perception in the human agent, that is, by creating an instance of perception for each concomitant object of perception, which renders its substrate seeing. Thus the

⁷⁴ Al-Āmidī, *Abkār*, 1.108.

⁷⁵ Al-Āmidī, *Abkār*, 1.110.

⁷⁶ Al-Āmidī, *Abkār*, 1.514.

ma' nā to which al-Āmidī refers here is the accident of vision which God creates.⁷⁷ In these parts of the work, al-Āmidī appears untouched by the alternative psychology with which he was so well acquainted earlier in his career.

A further context in which the discussion of vision arises is in defence of the Ash'arite position that God sees and hears. In this section, the importance of his opposition to al-Rāzī for al-Āmidī's theological project is clear. The focus of the section, as in the equivalent part of the *Ghāya*, is on evaluation of proofs proffered by classical and contemporary Ash'arites. Prominent with the section is al-Āmidī's critique of the standard classical Ash'arite proof for God's sight and hearing. This proof argues that since the only prerequisite to vision and hearing in a given substrate is the presence of life in the substrate, and since God is living, God must see and hear. This is extensively critiqued on a logical basis by al-Āmidī. His basic contention is that the proof relies on *qiyās al-tamthīl* (syllogism by analogy), but fails to demonstrate the presence of something in which the two constituents of the analogy are common (*ma' nā 'ām lahumā*).⁷⁸ Al-Rāzī, too, is critical of the classical proof for God's sight and hearing, and many of his arguments are closely comparable to al-Āmidī's.⁷⁹

Poignantly, al-Āmidī then critiques "a certain Ash'arite" who relies upon scripture in establishing God's sight and hearing. This is a very clear reference to al-Rāzī, who concludes his critique of the classical proof by stating: "let us adhere, in establishing that God Most High is hearing and seeing, to convincing scriptural proofs, and not insist on using these weak, obscure premises."⁸⁰ Al-Āmidī's response to the one who uses scriptural proofs in this question is that such sources "do not provide certainty [...] and adhering to them, [which is] his approach in establishing the essential attributes of God—[a question] which demands certainty—is forbidden."⁸¹ Subsequently, al-Āmidī offers his own proof for God's sight and hearing, and defends it extensively.⁸² In this context, he offers arguments against intromissionist and extramissionist theories.⁸³ Here, al-Rāzī's influence is felt once more in the distinction al-Āmidī draws, prior to refuting Ibn Sīnā's theory of vision, between the

⁷⁷The term *ma' nā* resists translation partly because of its use in a wide variety of ontological contexts. Much new work is being done on the subject in, for instance, Key 2018. Shihadeh (2012: 444) uses the expression "entitative determinant" to translate the term as used by classical Ash'arites with respect to the accident of life, which when present in the substrate, determines that it is a living being. The same translation would be appropriate in the present context.

⁷⁸Al-Āmidī, *Abkār*, 1.401–402; *Ghāya*, 122.

⁷⁹See for instance al-Rāzī, *Arba'īn*, 1.239–42; *Maṭālib* 3.193–96.

⁸⁰Al-Rāzī, *Arba'īn*, 1.242.

⁸¹Al-Āmidī, *Abkār*, 1.410.

⁸²Al-Āmidī, *Abkār*, 1.411; 411–16 (anticipated objections); 417–35 (counter-arguments). Al-Āmidī uses a single proof to establish all of God's essential attributes (*Abkār*, 1.276–77), and refers to it here in the case of God's sight and hearing, defending it against "objections specific to this case." It is premised firstly on the notion that each of the attributes (life, speech, and so on) is an attribute of perfection, and secondly on the impossibility of the creator being lesser than his creation (the humans in possession of these attributes) in perfection.

⁸³Al-Āmidī, *Abkār*, 1.428–32.

notion of the impression of forms as being identical with perception, and the idea that it is a condition for perception.⁸⁴ We know from the *Kashf* that al-Āmidī is well aware of al-Rāzī's problematisation of Ibn Sīnā's identification of sense perception with form impression. Whilst he makes no acknowledgement of al-Rāzī's part in drawing this distinction, nor engages his analysis of this point, it seems plain that al-Rāzī's analysis of Ibn Sīnā is behind this statement.

Striking here is the contrast between al-Āmidī and al-Rāzī's approaches. Both al-Rāzī and al-Āmidī consciously oppose intromissionist and extramissionist theories of vision. For al-Rāzī, this paves the way for his suggestion of a third possible explanation of perception, namely as a relational state. For al-Āmidī, however, the only valid explanation demands the constant and unrestricted creative action of God. In resisting the restructuring of his theological *summa* to accommodate treatment of Avicennan psychology other than in the context of the defence of postulates of classical Ash'arite doctrine, al-Āmidī evades serious engagement with that psychology. It appears that al-Āmidī's continuation of the parameters of discussion set by his predecessors is an aspect of his refusal to give credence to the alternative system within his context. In this, his thought contrasts with that of al-Rāzī, who experiments with new structures for philosophical-theological discussion. With reference to another aspect of al-Rāzī's critique of Avicennan psychology, al-Āmidī describes al-Rāzī as "a certain philosophising latter-day [theologian] (*ba'd mutafal-safat al-muta'akhhirīn*)."⁸⁵ His own conservative response in his later works may be motivated in part by opposition to what he sees as the excessively philosophising nature of al-Rāzī's theology.

9.6 Conclusions

Thanks both to the way in which Ibn Sīnā Islamicised the Greek philosophical tradition, and in large part to al-Ghazālī's serious engagement with Ibn Sīnā, theologians after al-Ghazālī were forced to take a stance in relation to that tradition. Aspects of Ibn Sīnā's philosophy (such as his notion of necessary existence) were so theologically compelling that their adoption was almost inevitable. Others were so problematic (such as his understanding of creation, or his denial of God's knowledge of particulars) that they elicited a fierce reaction. Ibn Sīnā's theory of vision, whilst philosophically interesting and innovative in relation to his Aristotelian and Neoplatonic heritage, seems at first theologically innocuous. There is nothing immediately at stake from the perspective of the theologian concerned primarily with defending a particular vision of God's character. Nevertheless it seems that Ibn

⁸⁴ Al-Āmidī, *Abkār*, 1.428. The same distinction is expressed in his later theological manual, *Ghāyat al-marām*, where he argues against vision "either by way of impression and representation or by the transfer of something of the object of sight" (*Ghāya*, 132).

⁸⁵ Al-Āmidī, *Abkār*, 1.109, in relation to al-Rāzī's claim that the faculties are only tools of the souls perception, and not themselves perceptive, on which, see Ibrahim 2013a: 298–99.

Sīnā's theory of vision did, in some respects, deeply threaten the Ash'arite conception of God's relation to existents in the created world.

Al-Āmidī's is a career of experimentalism in relation to Avicennism. He begins with a straightforward commitment to Ibn Sīnā's philosophy, and should the fifth volume of the *Nūr* one day be discovered, one would fully expect to find al-Āmidī endorsing Ibn Sīnā's theory of vision therein. In the *Kashf* we witness al-Āmidī's encounter with an intellectual both more critical and independent of Ibn Sīnā, and more philosophically innovative than he. His response is testament to his intellectual opposition to al-Rāzī far more than it is to his own philosophical ideas. In relation to the discussion of vision, al-Āmidī defends the more general principles of form representation which underlie Ibn Sīnā's intromissionist claims, but without seriously engaging al-Rāzī's objections or alternative theory.

In the *Rumūz*, al-Āmidī, now a committed theologian, experiments with a stance of tolerance towards Ibn Sīnā's theory of vision, and all other aspects of his philosophy (including his theory of matter's infinite divisibility, for instance), which do not directly challenge the fundamental classical Ash'arite doctrines of creation and of God's attributes. The work is further testament, if more is needed, to the prevalence of Ibn Sīnā as the paradigmatic philosopher of the post-Classical Islamic world. More pointedly, the discussion of vision in the *Rumūz* demonstrates one possible posture towards Ibn Sīnā that was in some cases assumed by post-classical Ash'arite theologians in relation to aspects of that systems which were considered to have no direct doctrinal implications—namely, a posture of uncommitted tolerance.

Yet this kind of pragmatism is not philosophically nor theologically compelling. In the *Abkār*, where al-Āmidī reverts to a position of outright opposition to all aspects of the worldview of the philosophers, we see that his failure to depart from the paradigms of classical Ash'arism precludes effective engagement with that worldview.

The complex web of challenges Avicennan philosophy presented to the tradition of *kalām* called for active, critical engagement with all aspects of that philosophy, and a willingness to progress from outdated structures and paradigms—and indeed from doctrines which were no longer considered Qur'ānically mandated. Meaningful dialogue of this kind was achieved in the works of al-Rāzī. Yet al-Āmidī's discussions of vision are significant in themselves for what they reveal of the philosophical decisions facing theologians in light of the challenges brought by Ibn Sīnā to the well-established beliefs of classical Ash'arism.

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Chapter 10

Setting One's Sights on Sight: Observations on Sense Perception in Sayf al-Dīn al-Āmidī



Jon McGinnis

Abstract This chapter considers the possible philosophical motivation driving al-Āmidī's theory of vision as it appears in his *Kashf*, which is a super-commentary on Fakhr al-Dīn al-Rāzī's commentary on Avicenna's *Ishārāt*. It suggests how certain advancements in medieval Islamic theories of vision (like the punctiform analysis of light) affected theories of cognition as well as how developments in one's theory of cognition (such as the rejection of the assimilation theory of perception) affected one's theory of vision. The chapter concludes with an alternative explanation to that of Laura Hassan for al-Āmidī's apparent rejection of his earlier theory of vision.

10.1 Introduction

Laura Hassan's chapter "Sense Perception in Sayf al-Dīn al-Āmidī: A Theologian's Encounter with Avicennan Psychology" provides an excellent survey of the theories of vision of both classical and early post-classical philosophers and theologians in the medieval Islamicate world. The survey serves to contextualize the distinct, even conflicting, discussions about vision by Sayf al-Dīn al-Āmidī (551/1156–631/1233), who early in his career seemed to endorse the view of the philosophers, but later embraced that of the theologians. In this chapter, I provide further context concerning medieval Islamic theories of vision and additionally suggest that al-Āmidī's apparent about-face from a philosophical approach to a theological one may be less doctrinally motivated than an indication of a more general methodological tendency among late classical and post-classical thinkers in the Islamicate world.

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10.2 Pre-Avicennan and Avicennan Theories of Vision and Cognition

In Sects. 9.3 and 9.4, Hassan nicely summarizes the various visual theories prevalent before al-Āmidī. She presents the ancient intromission view of Aristotle and the extramission view of Ptolemy (and, one might add, Galen), Avicenna's reconceptualization of the Aristotelian view, and then the extramissionist position of classical Mu'tazilites and finally the occasionalist view of vision, which classical Ash'arites favored. What is particularly illuminating is how Hassan contextualizes the various positions of the theologians within the two related issues of, one, whether God can be seen (which certain Qur'ānic passages suggest) and, two, whether God has, or even can have, the attribute (*ṣifa*) of vision. Here it is enough to note that this latter issue, once generalized into the question of what attributes can truthfully be predicated of God, was one of the most important philosophico-theological problems addressed in the classical Islamic period. Thus, the theological motivation for developing or endorsing a particular theory of vision is obvious: if vision is the effect of some causal relation between the seer and a visible object, wherein the visible object in some sense essentially causes vision, then God, who is uncaused in any way, cannot literally have the attribute of vision, but has it only metaphorically. I might further add that philosophers, like Avicenna, would have found it theologically damnable to suggest that God, in a way similar to our seeing, sees things (other than the divine essence). That is because such a view potentially jeopardizes divine simplicity (*tawḥīd*). For Avicenna, the act of non-metaphorically seeing would require that there are three distinct visual factors within God: God as seer, the divine act of seeing (particularly something other than the divine essence) and the representation or image within the divine mind of what is seen. This is just to add one further theological motivation to the one Hassan already nicely presents.

Hassan is less forthcoming about the possible *philosophical* motivation for developing or endorsing a particular theory of vision. Citing Avicenna, she identifies the philosophers' motivation with the goal "to ascertain the realities of all things" (p. 164). In general, this claim is certainly true, but there is a more specific motivation too. Starting at least as early as Plato and Aristotle, philosophical theories of intellectual perception (in both the ancient Greek- and medieval Arabic-speaking worlds) were modeled on theories of sensory perception and particularly theories of vision (cf. Plato, *Republic* 6, 507A–509C and Aristotle, *De anima* 3.4–5). Consequently, changes in one's optical theory frequently had ramifications for one's theory of cognition and vice versa.

There were major changes occurring in optical theory at the time Avicenna was writing, particularly in the punctiform analysis of light and how reflected light rays could form an image or representation on the retina. The scientific issue at stake was whether vision involved something entering into the eye, such as the sensible form, which acts upon the optical system to produce vision (the intromission theory of vision) or whether something is emitted from the eye, such as an optical ray or optical pneuma, which by contacting the sensible objects produces vision (the

extramission theory of vision). The extramission theories of Euclid (fl. 300 CE) and Ptolemy (c. 100 CE–c. 170 CE) seemed to have a decided mathematical advantage over intromission theories, since the rays that the eye emitted formed an optical cone. Subsequently, various visual phenomena like perspective—specifically, why objects at a distance appear smaller—could be given a mathematical explanation. In the case of perspective, the smaller the angle through which an object is observed, the smaller it appears. By the year 1000, scientists and philosophers in the Islamic world were developing intromission theories of light that could also avail themselves of these mathematical analyses. The emphasis now was on a theory of light. Rays of light, it was argued, reflected off every point of a sensible object in every direction. These reflected rays could impinge upon the eye so as to form a cone, thus subsequently allowing for the mathematical analyses which had given the extramission theory its edge.

Al-Bīrūnī (362/973–c. 442/1050) notes some of these changes in his correspondence with the young Avicenna; Avicenna's contemporary, Ibn al-Haytham (354/965–430/1040) gives them their most scientifically rigorous presentation in his optics (*Kitāb al-Manāẓir*); and the mature Avicenna popularizes them in book three of his own psychology of the *Shifā'*. Such changes to the theory of vision inevitably affected Avicenna's own theory of cognition.¹ As noted earlier, virtually all earlier theories of cognition likened it to vision. They also noted that just as vision requires light, and particularly the light of the sun; likewise cognition requires something like the sun. Avicenna was no different, except now he had a fully developed theory of light to explain the role of the cognitive versions of light and the sun. The details need not bother us. Suffice it to say that for Avicenna a separate intellectual substance, which he dubbed "the Active (or Agent) Intellect" ('*aql fa'āl*'), emanates intelligibles in much the same way that the sun emanates light and that these emanations impinge upon the intellect in much the same way that light rays impinge upon the eye.

Additionally, however, and on independent grounds, Avicenna developed an alternative view of intellectual perception. His alternative position comes in the context of a vehement rejection of a particularly popular interpretation of the Aristotelian theory of cognition, which Avicenna ascribed to Porphyry.² Porphyry's interpretation of Aristotle claims that in the act of cognition, the intellect takes on the form of the thing known so as actually to become the thing known, at least formally; this position is sometimes dubbed "the assimilation theory." In contrast, for Avicenna, in the act of knowing, the soul receives an abstract (*mujarrada*) version of the form as if the soul were a place for it (*makān li-hā*). The important point is that for Avicenna, in cognition, the soul does not become or obtain in the manner of a substrate the reality of the thing known. Hence, assuming that one's theory of vision ideally maps onto one's cognitive theory (and again Avicenna thought he could show that it did), then given Avicenna's preferred interpretation of the act of

¹ See McGinnis 2013.

² See Avicenna, *al-Nafs/al-Shifā'* 4.6, 239–41. For studies see Finnegan 1956, and Adamson 2007.

cognition, the eye in seeing need not become the reality of the thing seen, as in certain interpretations of Aristotle, like that of Richard Sorabji.³ Consequently, a reasonable interpretation of Avicenna's theory of perception would be that when the perceiver receives, obtains or is impressed with some perceptible form, it happens not in some absolute way so as to become the thing perceived, but in some relative way. On this interpretation, perception would be, or at least essentially would involve, a relative state (*hāla idāfiya*) between the perceiver and the thing perceived. I would like to suggest that al-Āmidī in his response to objections from Fakhr al-Dīn al-Rāzī (544/1149–606/1210) begins to lay down the groundwork for just such a relational interpretation of Avicenna's account of perception, which Naṣīr al-Dīn al-Ṭūsī (597/1201–672/1274) will subsequently develop.

10.3 Post-Avicennan Theories of Vision and Cognition

Let me quickly repeat al-Rāzī's critique of Avicennan perception (*idrāk*), which Hassan has admirably presented. Al-Rāzī understands Avicenna's theory of perception to require the perceiver to obtain (*huṣūl*) the reality (*ḥaqīqa*) of the perceived object; call this the "obtainment theory." Al-Rāzī's objection then runs: if, on the one hand, the perceiver obtains the reality of what is perceived, it would become the very thing perceived, which Avicenna rejects. On the other hand, if the perceiver obtains something other than the reality, there is not perception, at least not given the Avicennan theory of perception under consideration. For the perceiver must either obtain the reality of what is perceived or obtain something other than that reality; yet both options are in some way inconsistent with the theory, so Avicenna's account of perception is inconsistent, or so the objection runs.

Al-Āmidī responds to the dilemma by claiming that what is obtained in the act of perception is a representative likeness or model (*mithāl*) of the reality, which does not entail that the perceiver becomes the thing perceived. Hassan rightly presses al-Āmidī on this point (Sect. 9.5.1). I take her concern to be this: Is a *mithāl* the reality of what is perceived or something other than that reality? If it is the reality, then the perceiver becomes the thing perceived, whereas if it is not, there is not perception. Al-Āmidī's response is seemingly wanting, for the original dilemma appears to re-emerge. Or does it?

When al-Rāzī presents Avicenna's theory of perception as it is found in the *Ishārāt*, he cites it thusly: "The perception of a thing is that its reality (*ḥaqīqatuhu*) is a representation/model (*mutamiththalat^m*) in the perceiver [...]." Al-Rāzī's presentation, however, is incomplete and omits a part of Avicenna's account of perceiving. Avicenna's whole account runs: "The perception of a thing is that its reality is a representation/model in the perceiver *which that by which there is perception observes* (*yushāhiduhā mā bihi yudriku*)." Al-Rāzī considers the omitted material to

³ Sorabji 1974: 72, n.30.

be a second independent element of Avicenna's theory of perception, which he considers as qualifying the core notion. He considers it only at the end of his discussion after dealing with what he takes as the essential element of the theory, namely, that perception is an obtainment (*huṣūl*) of the reality or the form of what is perceived.

Al-Āmidī, in contrast, seems to take the omitted phrase as integral to Avicenna's account. A mere obtainment of whatever—whether the sensible form or reality or representation—is *not* perception, but a condition (*shart*) or medium (*mutawassit*) for perception. The reason al-Āmidī gives for rejecting al-Rāzī's interpretation of Avicenna is that, in the case of sight, it would entail double vision. That is because if perception simply is obtaining the sensible form or reality or representative likeness—that is, having it impressed upon the sensory organ—then when one looks at some object, one should see two of the object. The conclusion follows from the obtainment theory, since the representation of the object is impressed upon both eyes. Each eye individually obtains the impression or sensible form and so, given this account of perception, there should be two acts of perception and so two seeings, which is phenomenally false. Avicenna himself observed this point about double vision in the *De anima* of the *Shifā'*.⁴ Al-Rāzī points to the problem of double vision, but for him it is evidence against Avicenna's account of perception in terms of the obtainment of a sensible form. Al-Āmidī likewise appeals to the issue of double vision but now to show that, contrary to al-Rāzī, Avicenna's account of perception cannot be cashed out solely in in terms of obtainment. In its place, al-Āmidī in effect stresses the role of *that by which there is perception*, which is Avicenna's original language, but which al-Āmidī calls the perceptive power (*qūwa mudrika*), namely, the soul.⁵ The soul must observe, witness or be aware of the representation if there is to be perception. Consequently, perception no longer becomes simply the *obtainment* of a reality or likeness as al-Rāzī would have it, but a mediation between the perceiver and the perceived object via the representative likeness.

The above discussion occurs within the context of al-Āmidī's response to another objection that al-Rāzī raises against Avicenna. Al-Rāzī accuses Avicenna of committing a false dichotomy in arguing for his preferred theory of vision. Avicenna's general argument, as al-Rāzī understands it, assumes that vision is either by extramission or intromission, the two theories discussed above. Avicenna shows that the various forms of extramission theories of vision are false, and thus concludes that the intromission theory must be true. Al-Rāzī, as Hassan notes (p. 180), simply charges Avicenna with not considering the possibility that perception involves a relational state (*ḥāla nisbīya idāfiya*, literally, "a relationally relative state").⁶ Thus, Avicenna's original dichotomy is not exhaustive, and so his proof is invalid.

I would like to propose that when al-Āmidī emphasizes that it is the *mithāl* or representative likeness that is obtained in vision, he has not missed the thrust of al-Rāzī's charge that Avicenna commits the fallacy of a false dichotomy, as Hassan

⁴ Avicenna, *al-Nafs/al-Shifā'* 3.5, 151.

⁵ Avicenna, *al-Nafs/al-Shifā'* 3.8.

⁶ Al-Rāzī, *Sharḥ al-Ishārāt*, 226.

seems to suggest, but that he is responding directly to that charge. Al-Āmidī, I submit, is suggesting that Avicenna's account of perception is not merely an intromission theory, but a relational one as well. Intromission explains how the representative likeness is obtained, and then through the mediation of that representative likeness there is a relation between the perceiving power and the perceived object. Al-Rāzī's objection, namely, that Avicenna does not consider a relational account of perception, fails given this interpretation of Avicenna, for not only does Avicenna consider it, he also adopts it.

Admittedly, al-Āmidī is not as explicit as one might hope in developing his response; however, Naṣīr al-Dīn al-Ṭūsī, who was a younger contemporary of al-Āmidī, is explicit. "Perception happens to have two relations (*idāfatāni*), one of which is to the one having perception and the second to the thing perceived."⁷ Al-Ṭūsī then continues and develops al-Āmidī's point about mediation and the importance of observing the perceived object. Al-Ṭūsī even responds to an objection that "observing" (*mushāhada*) is a kind of perception, which, if so, would render al-Ṭūsī's preferred interpretation of Avicenna circular. Again, al-Āmidī makes none of these points as explicitly as al-Ṭūsī will; however, I do believe that the germ for all of the key elements in al-Ṭūsī's relational interpretation of Avicenna can be found intimated in al-Āmidī's *Kashf*.

10.4 A Difference in Intellectual Genera or a Difference in Intellectual Genre?

Let me conclude now with one final observation, which concerns a more global claim that Hassan makes about al-Āmidī's intellectual development. She maintains that al-Āmidī in his early career was a philosopher (or at least had philosophical leanings), but in the later part of his career did an about-face and became an orthodox Ash'arite. In other words, al-Āmidī's intellectual commitments at these two different times in his life are generically different. Given that al-Āmidī's early writings were philosophical, while his later writings were theological, this developmental account is natural enough, and Hassan has recently and persuasively developed this thesis at length.⁸ Still, it does leave unexplained al-Āmidī's near amnesia with respect to his earlier philosophical account of vision when treating vision in his theological works. Thus, I want to consider a suggestion by Frank Griffel about a tendency one sees in late classical and post-classical intellectual circles, and apply that suggestion to al-Āmidī.

In a [forthcoming](#) book, *The Formation of Post-Classical Philosophy in Islam*, Griffel proposes that there was an increasing tendency among scholars, like Fakhr al-Dīn al-Rāzī and others, in the Islamicate world during the late twelfth and

⁷ Al-Ṭūsī, *Hall*: in Avicenna, *al-Ishārāt*, 2.360.

⁸ Hassan 2020.

thirteenth century to live with and even embrace systematic ambiguity. “Systematic ambiguity” is the idea that a tension may exist, even to the point of apparent inconsistency, between claims in various books by a single author when that author is writing in different genres. Griffel’s idea is that when writing a work in a philosophical genre, for example, an author may defend and explain various phenomena using solely the principles of *falsafa*, whereas when writing a theological work, the same author would appeal solely to axioms of *kalām* or a particular school of *kalām*. The aim of a given author is not to demonstrate in any strong sense that one system is *true* or *correct* or *the real system* to the exclusion of all others, but to show how the system’s axioms or principles could be consistently employed to describe our world or used to respond to objections leveled against the system. This tendency, which Griffel suggests, is a larger scale version of a phenomenon that one sees in certain physical sciences at the time, like astronomy. Astronomers proposed mathematical models that were empirically adequate in that they accurately describe what one sees in the heavens and are scientifically useful for making predictions. The issue of whether a particular model captured the truth of reality, however, was set aside as falling within the domain of metaphysics and not astronomy. Similarly, one might engage in constructing a consistent philosophical system or a consistent theological system, while not being committed to the absolute truth or necessity of every claim put forth in that construction. A scholar may have pragmatic concerns for preferring one system or aspect of a system over another, even while not feeling a need, or even the ability, to demonstrate the absolute truth or certainty of one’s preferred system.

If one simply considers the chronology of al-Āmidī’s writings, progressing from Avicennan philosophy to Ash‘arite theology, Hassan’s developmental thesis is the most likely story. Still, if one is willing to entertain a “genre-jumping” hypothesis, then that hypothesis presents a framework for explaining why al-Āmidī seems to forget his earlier philosophical work on vision and does an apparent doctrinal turn-about. It also explains why al-Āmidī focuses more on responding to al-Rāzī’s critiques rather than developing a relational account of Avicennan perception as al-Tūsī would do: al-Āmidī may just have been more interested in system-wide consistency rather than absolute demonstrations and refutations. Of course, the “genre-jumping” hypothesis comes at a cost. One can no longer speak of what al-Āmidī’s doctrinal position is *absolutely*. Still, one can say what the positions of his books are as well as what intellectual resources they might provide for later philosophers and theologians. Thus, one can still track his subsequent influence in a given genre as, for example, on al-Tūsī’s commentary on Avicenna’s *Ishārāt*. One can also still assess how good al-Āmidī’s arguments are relative to Avicennianism or Ash‘arism, and so one can evaluate al-Āmidī as a thinker.⁹

⁹I must confess that I am not sure how this hypothesis can explain al-Āmidī’s strong comments, which Hassan cites (p. 179), forbidding anything less than certainty when establishing the divine attributes. Still, Hassan herself shows in another work (Hassan 2014) that al-Āmidī was willing to suspend judgment on atomism despite his recognition that it was integral to classical Ash‘arite proofs for temporal creation and the existence of God.

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Chapter 11

John of Jandun on Sense Perception and Instantaneous Change



Aurélien Robert

Abstract The aim of this paper is to show that John of Jandun, a French philosopher active in the first decades of the fourteenth century, defended an interesting interpretation of Aristotle's theory of sense perception. His view on this topic could help us clarify some aspects of the contemporary debate among specialists of the Aristotelian tradition about the dependence of sense perception on physical changes in the medium and the organs. John of Jandun made use, much more than his contemporaries, of Alexander of Aphrodisias' commentary on the *De sensu*, and Averroes' commentaries on the *De anima* and the *Physics*. But his solution seems nonetheless original. This paper will focus on the nature of the changes involved in sense perception. I will try to show (1) that for Jandun sense perception is a kind of relational and qualitative change in the soul, which is not a mere Cambridge change; and (2) that for him sense perception is an activity of the soul, which is not reducible to the reception of a form in the organs.

11.1 The Contemporary Debate on Aristotle's Account of Sense Perception

Since the 1970s, Aristotle's account of sense perception has been the subject of an important debate about the intentionality of sensation and its dependence on material processes.¹ To what extent is perception dependent on physical changes in the medium and the sense organs? The difficulty arises because Aristotle sometimes suggests that perception is not a material or physiological process as such, even though it always depends on the medium and sense organs, the functioning of which

¹For an overview of these debates, see Caston 2004.

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seems to require some kind of physical change and, as it seems at first sight, some kind of material and physiological modifications.

Richard Sorabji has argued that sense perception involves some physiological processes and that a sense organ literally exemplifies the sensible quality that is cognised by this particular sense. In other words, the eye jelly literally turns blue when someone is looking at the sea.² Another interpretation of Aristotle's view is functionalism. According to this view, perceiving is a cognitive function depending on causal inputs, not a material change as such. Martha Nussbaum and Hilary Putnam have famously argued for this reading.³ Contrary to Sorabji, they insist on the distinction between the physical processes involved in perception and the intentional states of perception resulting from the reception of a sensible form. Nevertheless, like Sorabji, they tend to reduce sense perception to the reception of the sensible form, even though they consider this reception to be a kind of spiritual, not material, change.

Against both the literalist and the spiritualist interpretations of sense perception as a reception of a form, Myles Burnyeat has suggested reading Aristotle in a different way.⁴ He insists on the definition of perception as a cognitive change, not a material change. According to him, the change occurring in vision, for instance, has nothing to do with a material change tending towards the acquisition of a new form, like the material changes involved in the building of a house, for instance. Therefore, Burnyeat considers that for Aristotle the form is simply *perceived through* the medium and the sense organs, not *received in* them, neither materially nor spiritually. As he puts it:

According to the Aristotelian theory of perception, there is no physiological process which stands to the awareness of a colour or a sound as matter to form. Aristotle believes that when he sees a colour or hears a sound, nothing happens save that he sees the colour or hears the sound.⁵

To put it differently, sense perception does not correspond to a particular state of the material organ but rather to a state of the soul perceiving a form. For Burnyeat, the eye is just like the diaphanous medium for light: the sensible form is just seen through the medium and the eye, just as a coloured object can be seen through a glass of water. The colour appears in—or through—the water, but water is not coloured as it would be in the case of someone putting a colourant in it. In any case, the fact that the medium and the organs are changed or modified in some way cannot be more than a mere condition of perception, and it certainly cannot be perception itself.

My aim in this paper is not to give a new interpretation of Aristotle, but to see how these questions could be addressed from a medieval perspective. For if some of the above-mentioned philosophers enjoy quoting Thomas Aquinas for the defence

² Sorabji 1974, 1995.

³ Nussbaum and Putnam 1995.

⁴ Burnyeat 1995a.

⁵ Burnyeat 1995b: 421.

of the spiritualist interpretation,⁶ it is pretty rare to find someone mentioning other medieval authors in contemporary discussion of Aristotle's theory of sense perception. Yet the medieval debates on sense perception offer a wealth of opinions and arguments, which are not reducible to the Thomistic view. In this paper, I will focus on one point, the nature of the changes involved in sense perception; and on one particular author, John of Jandun (1280–1328), a famous French master of the University of Paris, who wrote several commentaries on Aristotle's texts in the first decades of the fourteenth century, and who is usually remembered for his allegiance to Averroes's psychology.

As it clearly appears in the recent debate I just touched on, the nature of the change involved in sense perception is one point, if not the crucial point, of disagreement between the literalists and the spiritualists, and it is also central to Burnyeat's position. Without saying that John of Jandun is absolutely original—he probably borrowed some elements from his predecessors—his interpretation of Aristotle could suggest a different way of understanding how sense perception can depend on real and physical changes, without being itself a physical change. As I will try to show, one basic feature of sense perception, for John of Jandun, is that it is an instantaneous and indivisible change in the soul, not a successive and continuous one like most physical changes. The main reason for this is that perception is a relational change. Sense perception occurs only in relation to the presence of something else or, more precisely, in relation to another change, either in the sensible thing itself, or in the medium and the sense organs.

Presented this way, it looks as though perception is what we call nowadays “a mere Cambridge change,” that is to say, not a real or physical change, but a mere logical change in at least one relational property in the thing. In this case, when some change occurs outside the soul, a new predicate is true of the soul without the soul being really changed in any way. When Peter Geach famously analysed this category of change, he gave the following example: if Theaetetus is getting taller than Socrates, at the very instant in which Theaetetus is taller than Socrates, Socrates becomes shorter than him, without being physically changed.⁷ What is interesting in John of Jandun's position is that he definitely tries to avoid reducing perception to a “mere Cambridge change.” According to him, something really changes in the sensitive soul when I perceive a sensible object, even though this kind of change does not follow the general principles of continuous change as described in Aristotle's *Physics*. This is not to say that this real—though instantaneous—change in the soul does not involve a material alteration elsewhere, but only that it occurs relatively to some such alteration.⁸ John of Jandun therefore tries to define a new category of change, which is neither material, nor purely logical. Moreover, he tends to describe sense perception as something distinct from the reception of the sensible form.

⁶ See, for instance, Nevitt 2013.

⁷ Geach 1969: 71–72.

⁸ This reading is similar, to some extent, to Sisko 1996.

Indeed, it is considered as something like a second-order supervening property in the soul, which corresponds to a special kind of immanent activity.

John of Jandun is one of the first medieval commentators on Aristotle's *De sensu et sensato* who took very seriously Alexander of Aphrodisias's commentary. Of course, Thomas Aquinas, Peter of Auvergne, and others, already made use of Alexander's work,⁹ but, as I have tried to show elsewhere, John of Jandun adds some significant novelties, which are based on Alexander's text or reactions to his readings.¹⁰ In his commentary on *De sensu* 6, Jandun actually discusses, although very briefly, Alexander's view, according to which the change involved in the medium and the sense organs is a mere relational change. When we compare this short comment with his other commentaries—on the *De anima*, the *Metaphysics* and, most importantly, the *Physics*—it becomes clear that John of Jandun defends an interesting and quite original reading of Aristotle, which is a development of Alexander of Aphrodisias's and Averroes's intuitions.

Before getting to the heart of Jandun's position, let us see how Aristotle himself presents certain key elements concerning the nature of change in sense perception.

11.2 Sense Perception and the So-Called Quasi-Alteration

It is quite obvious that for Aristotle sense perception involves some kind of change. As he puts it in the *De anima*, "perception arises in both being moved and being affected, just as we say, for it seems to be a kind of alteration."¹¹ Here, the important part of the quotation is "a kind of alteration" (ἀλλοίωσις τις). Alteration is defined by Aristotle as a change in the category of quality, as opposed to a change in the category of substance (generation and corruption), or quantity (like growth), or place (locomotion). This means that if the change in the organ responsible for some sense perception were a real alteration, then a sensible form—that is, a sensible quality—should be really present and exemplified in the organ and/or in the soul (either as a material form, as in Sorabji's literalist interpretation, or as a spiritual form, as in Nussbaum-Putnam's view). By contrast, if it is only "a kind of alteration," or what Myles Burnyeat and John Sisko, among others, used to call a "quasi-alteration,"¹² then the reception of the form does not necessarily imply that it is really exemplified in the sense organs. Defining precisely what Aristotle had in mind when he mentions this "kind of alteration" is therefore one of the crucial elements for our understanding of the puzzles sketched above.

⁹For Thomas Aquinas, see Mansion 1930. For Peter of Auvergne, see *Questions on Aristotle's De caelo*, ed. G. Galle 2003, *passim*.

¹⁰Robert 2014.

¹¹*De An.* 2.5, 416b33–34, trans. Shields, 32.

¹²Burnyeat 1995b: 425–30; Sisko 1998.

The next lines of *De anima* 2.5 give some important specifications. Here, Aristotle distinguishes two kinds of transition from one state to another: in some cases, a previous state is destroyed in order for a new one to occur; in other cases, the new state is only a perfection of a pre-existing potency, without any destruction or replacement of a previous state. Real alterations correspond to the first case: when something hot is getting cold, for instance, a new quality replaces the previous one. In the second case, Aristotle says that it is “a progression towards itself and its own realisation”; and so, he continues, it is “either not a case of altering or a different kind of alteration.”¹³ It is an activity, not a change like alteration.¹⁴

As the whole text suggests, perception pertains to the second kind of change, which is in some sense similar to alteration, in so far as it is a qualitative change, but which is not an alteration properly speaking, because nothing is destroyed or replaced by the actualisation of the sense faculty. In order to understand what kind of change a pure actualisation of a potency is, when applied to sense perception, one has to keep in mind that it is also an instantaneous change. Indeed, alteration is a continuous change between two states, with many intermediary states. On the contrary, sense perception does not take time and there are no intermediary states between the pure potency and its actualisation.

This last remark is supported by a section of the *Nicomachean Ethics*, where Aristotle compares pleasure to sense perception.

The activity of seeing seems to be complete over any given span of time: it is not lacking in anything which by coming to be at a later time will complete its specific form; and pleasure too seems to be like this. For it is a kind of whole, and there is no length of time such that if a pleasure someone takes during it goes on for a time that's longer, the form of the pleasure will be completed. Hence it is not a movement either. For every movement involves time, and relates to some goal, as does, e.g. the movement that is building, and it is complete when it finally does what it aims at.¹⁵

Seeing is an activity that is complete as a whole, that is, not part after part, and at an instant, i.e. not in a continuous process. It is not, therefore, a process or a movement. Building a house takes time and is complete only at the end of the process, whereas being pleased or perceiving something is a complete act, or state, instantaneously acquired when it is actualised. It is totally present at every instant in which it is actualised, because there is no external end: this act is its proper and immanent end. Consequently, seeing something cannot be an alteration strictly speaking, since alteration is a kind of motion or process that normally takes time and is completed only at the end of this process (like the whitening or warming of a piece of wood, for instance). Another alternative is that sense perception is a kind of generation, a coming-to-be, which seems to be instantaneous too. But, as Aristotle explicitly affirms in the same passage, “there is no coming-to-be of seeing.”¹⁶ It is not a

¹³ *De An.* 2.5, 417b6–7.

¹⁴ Heinaman 1995, 1998, and 2007.

¹⁵ *EN* 10.4, 1174a14–21, trans C. Rowe, 245–47.

¹⁶ See the preceding footnote.

coming-to-be, because no subject comes into existence. It is only an act, that is, a new quality in the soul that is drawn out from potency. What happens in sense perception is therefore the actualisation of the sense faculty by the presence of the sensible object.

Aristotle gives more explanations of this distinction in *Metaphysics* Θ, where he deals with act and potency. In Chap. 6 he affirms that every change is a kind of actualisation, but some are like motions or processes (losing weight or learning), whereas others are, in some way, pure actualisations (like seeing or understanding). The main difference between these two kinds of actualisation is that the first takes time to be completed, whereas the second is instantaneous. Let me quote this text:

Since of actions of which there is a limit none is a completion, but is rather related to a completion—for example, making thin, these [bodily parts] themselves when being made thin are in change in this way, and those things which the change is for the sake of do not yet obtain—these things are not an action or at least are not complete (for there is no completion); but that in which the completion inheres is also action. For example, at the same time one is seeing [and has seen], and is understanding [and has understood] and is thinking and has thought, but it is not that one is learning and has learned, nor is one being healed and has been healed. [...] Of these then [it is necessary] to call some changes, and others actualities. For all change is incomplete, thinning, learning, walking, house building; these are changes and surely incomplete. For it is not at the same time that one is walking and has walked, nor building a house and having built a house, nor coming to be and having come to be, nor being changed and having been changed, but these are different, and so too if something is bringing about change and has brought about change. But the same thing at the same time has seen and is seeing, and is thinking and has thought. So I call such a thing an actuality, but that thing a change.¹⁷

This is a clue to a better understanding of Aristotle's *De anima* 2.5. The actualisation of the potency of seeing or understanding is instantaneous, because as soon as the potency is actualised its end is reached. As soon as I perceive something, my faculty of perception is totally actualised. For this reason, at the same time someone is seeing and has seen, all at once he perceives and has perceived.

This kind of instantaneous change reminds us what Aristotle says in his *Physics*, that strictly speaking there is no motion in the category of relation.¹⁸ He also writes in the *Categories* that habits, dispositions, perception, and knowledge belong to the category of relation—even if later in the same text, he also affirms that they are qualities¹⁹—and therefore it seems safe to say that a change in perception belongs to this kind of relational change. As a relation, perception cannot be a motion, because, as many recent commentators have argued, relational changes are instantaneous.²⁰

In the *Nicomachean Ethics*, the relational aspect of sense perception is explicitly presented as an argument for its total completeness in an instant:

But since every sense is active in relation to the sense-object, and completely active when the sense is in good condition and its object is the finest in the domain of that sense (for

¹⁷ *Metaph.* 9.6, 1048b18–35, trans. S. Makin 2006, 7–8.

¹⁸ *Ph.* 2, 225b10–13.

¹⁹ Respectively, *Cat.* 7, 6b2–3, and 8, 8b26–10a26.

²⁰ See Geach 1969, and Wardy 1990.

something like this, more than anything else, is what complete activity of a sense seems to be; let it be a matter of indifference whether we say the sense itself, or what it is in, is active)—this being so, well, in the case of each of the senses the activity that is best is the one whose subject is in the best condition in relation to the object that is most worthwhile in the domain of that sense.²¹

To sum up: if a sense faculty is well disposed and if the sensible object corresponding to this faculty is in a good position to act on the medium and the senses, the sense faculty enters into a relation with the object and is instantaneously actualised.

This, however, raises a new puzzle about the mechanisms of sense perception. Indeed, it is not absolutely certain that all the sensible forms actualise the sense organs in the same way. Indeed, as Aristotle suggests in his *De sensu et sensato*, there is a difference between light and colour on one hand, and sounds and odours on the other.²² According to him, illumination is an instantaneous change, which is only due to the co-presence (that is, a relation) of two things, whereas the diffusion of sounds and odours in the medium takes time until they arrive to the sense organs.²³ This is so because illumination is a kind of instantaneous alteration and not a movement, whereas the diffusion of sounds is a local motion (φορὰ). For alteration, he says, sometimes happens all at once, like water that freezes in an instant.

Now, how could it be the case that for all kinds of sense perception, our potencies of perceiving are actualised instantaneously, if only illumination is instantaneous? Aristotle's answer to this question in the *De sensu* is complicated. On the one hand, he seems to repeat exactly the same general claim as in the *Metaphysics* and the *Nicomachean Ethics* about the instantaneousness of change in sense perception; on the other hand, he seems to add a new element: even vision is not a mere relational change. Here is the relevant part of *De sensu* 6:

Now, even if it be true that the acts of hearing and having heard, and, generally, those of perceiving and having perceived, form co-instantaneous wholes, in other words, that acts of sense perception do not involve a process of becoming, but have their being none the less without involving such a process; yet, just as [in the case of sound], though the stroke which causes the sound has been already struck, the sound is not yet at the ear [...] is the same true of colour and light? For certainly it is not true that the beholder sees, and the object is seen, in virtue of some merely abstract relationship between them, such as that between equals. For if it were so, there would be no need [as there is] that either [the beholder or the thing

²¹ EN 10.4, 1174b15–20, trans. C. Rowe and S. Broadie.

²² *Sens.* 6, 445a20–447a12.

²³ “But [though sound and odour may travel,] with regard to Light the case is different. For Light has its *raison d’être* in the being [not becoming] of something, but it is not a movement. And in general, even in qualitative change the case is different from what it is in local movement [both being different species of kinesis]. Local movements, of course, arrive first at a point midway before reaching their goal (and Sound, it is currently believed, is a movement of something locally moved), but we cannot go on to assert this [arrival at a point midway] like manner of things, which undergo qualitative change. For this kind of change may conceivably take place in a thing all at once, without one half of it being changed before the other; e.g. it is conceivable that water should be frozen simultaneously in every part.” (*Sens.* 6, 446b29–447a3, trans. J. I. Beare, in Aristotle 1931.)

beheld] should occupy some particular place; since to the equalization of things their being near to, or far from, one another makes no difference.²⁴

Here Aristotle repeats the same thesis about sense perception: it is a kind of whole, and it appears instantaneously, as soon as a sensible object is in a good position to actualise the sense faculty. Therefore, sense perception is a relational change in as much as it depends on the presence of something else (the sensible object), but as Aristotle also suggests, it is not a mere relational change, because it is not like the relation of equality between two things. So it is not a relational property like the one someone acquires when someone else becomes his equal in size.²⁵ To be able to perceive something, the sensitive faculty does not only need a sensible object in a particular location, it also demands that there is a causal relation between the cognitive faculty and the object.

As it seems to me, in this passage of the *De sensu* Aristotle deals with two different but related topics at the same time. His first aim is to explain the difference between the instantaneousness of illumination, which is a kind of alteration, and the diffusion of odours and sounds, which is a local movement and takes time. But he also indicates, in the same way as in the *Nicomachean Ethics*, that the very act of sense perception corresponds to an instantaneous and relational change in the soul. According to my reading, it is not the case that Aristotle restricts his thesis about the instantaneousness of change in sense perception to vision due to the specific nature of illumination. If I understand this passage correctly, it is indeed the case that illumination of the medium and the eyes is a “quasi-alteration,” whereas other sensible qualities are coming to the sense faculties by a real motion, which is successive and takes time. But considered as dispositions or states of the soul, all sense perceptions (including hearing, smelling, and the rest) are instantaneous and—in some way that needs to be explicated further—relational changes. They are relational because the sense faculty is actualised only relatively to the presence of the sense object and relatively to some physical or relational changes in the medium and the organs. But it is not a “mere Cambridge change” as in the case of a relation of equality between two things (when Theaetetus is getting as tall as Socrates for instance)—in any case, this is how John of Jandun understood Aristotle’s thesis when he developed his own position on the basis of Alexander’s interpretation of *De sensu* 6.

²⁴ *Sens.* 6, 446b3–12.

²⁵ Thomas Kjeller Johansen uses this text to show that mediation in sense perception is not a “mere Cambridge change” (Johansen 1997: esp. 136–45).

11.3 John of Jandun and Alexander of Aphrodisias on Illumination and Vision as Relational Changes

Let me begin with the nature of change in the medium and the organs. In his commentary on the *De sensu*, John of Jandun clearly affirms—like Aristotle—that the diffusion of sounds involves some kind of local motion (sound is the result of the percussion of air and literally moves in the medium), whereas the diffusion of light does not involve local motion, because it is a kind of alteration.²⁶ John of Jandun explains this difference between sensible objects with the notion of relational change. Let me quote Jandun on this point:

One has to say that the species of the objects of vision are produced instantaneously in the medium and the organ, because things whose being follows from the connection (*habitus*) between two things exist at an instant; indeed, it is evident that connection (*habitus*) is a relation (*relatio*), and a relation does not obtain in time, as appears in *Physics* book 7, and, consequently, the same holds for what is consequent upon a relation. But the species of the objects of vision are consequent upon a connection, that is the exposition of a luminous or coloured body to the diaphanous of light or to what can be coloured; therefore etc. This argument is taken from Alexander's commentary; and he illustrates this with <the example of> being on the right <of something>.²⁷

So, according to Jandun, illumination produces an instantaneous change in the medium *and the organ*, because it is a relational change. A classical example of a relational change—at least since Simplicius²⁸—is the following: if I turn around a column, the column loses some relational properties, such as being on the left of me, and acquires new ones, such as being on the right of me, without any physical change in the column itself. At first glance then, Alexander and Jandun seem to treat the change in the medium and the organs as a relational change of that kind, i.e. as a “mere Cambridge change.” Such a radical interpretation would add grist to Burnyeat's mill, since one could conclude from this that also sense perception can be considered as a mere relational property, since, at least in the case of vision, the act of seeing depends on the relational changes that occur in the medium and the sense organs. But there is a problem here: how could this change be relational in the sense of being on the left of something but not in the sense of being equal to something, as Aristotle explicitly says? The solution is that there must be something more than a mere relational change.

²⁶“Utrum species soni pertingant ad organum et medium in instanti vel successive” (John of Jandun, *Quaestiones super librum De sensu et sensato*, q. 32, f. 22ra–va).

²⁷“Dicendum quod species visibilium fiunt in instanti in mediis et in organo, quia quorum esse consequitur habitudinem aliquorum adinvicem, illa sunt in instanti; habitudo enim relatio est, sicut est manifestum; et relatio non acquiritur in tempore, ut patet 7 *Physicorum* et per consequens illud quod relationem consequitur; sed species visibilium consequitur habitudinem, scilicet oppositionem corporis luminosi, aut colorati, ad diaphanum luminis, aut coloris susceptivum; quare etc. Et ratio sumpta est ex commento Alexandri et exemplificat de dextro.” (John of Jandun, *Quaestiones super librum De sensu et sensato*, q. 31, f. 21va–vb.)

²⁸See Luna 1987.

Jandun uses mainly Alexander's commentary in this connection, probably because Averroes is not very loquacious on this point in his *Epitome* on the *Parva naturalia* and his *De anima*.²⁹ Now, if we take a close look on Alexander's text, the reason why he uses the local relation of "being on the right" is not to show that the medium and the organs are subjects to mere relational changes. First, as far as I understand his position, he seems to say that Aristotle argued plausibly that illumination of the medium and the organs on one hand, and seeing on the other, do not obtain like the relation of equality. For two things can be equal without being related by any other local, causal, or physical relations. This is clearly not the case with light. Let us imagine, for example, that I am as tall as the king of Sweden. If it were the case, then we would be objectively equal—at least relatively to height—without being related by any particular local or causal connections, and, more generally, by any kind of relationship (I do not know him, I am not his friend or part of his family). So, Alexander agrees that vision does not occur along with this sort of relation. But vision nonetheless depends on a relation, which is in some way similar to a local relation (like being on the right of something), in so far as this kind of relation depends on the respective positions of the *relata*. You cannot see something if it is too far, for instance, or if it is not in your field of vision. This is not the case for equality. You can be equal to something that exists on the other side of the moon without any other relation between you and this thing. In other words, according to Alexander, Aristotle did not deny that vision is or at least depends on a relational change, but he specifies that it is not a change like the one Socrates undergoes when, for instance, Theaetetus is getting as tall as him.

According to Alexander, one difference between the case of a visible quality and other sensible qualities, such as sounds or odours, is that illumination immediately ceases to exist when the source of light disappears, whereas you can still smell the odour of lemon when the lemon itself has disappeared or is too far to be sensed. In his *On Aristotle On Sense Perception*, he writes:

That light depends on a relation but not on an alteration is clear from the fact that, whereas things which are altered have not ceased from the affection that is generated in them by that which alters <them> immediately upon its departure (for when that which heats departs that which is heated by it does not immediately cease from the heat that is generated in it by <that which heats>), things that are such by virtue of their relation to something cease to be in the relation to that thing in conjunction with its departure. For the father has ceased being a father when the son has died, and when that which is on the left had departed that which is on the right is on the right no longer. The same is true of light. For it departs all together in conjunction with the departure of that which naturally illuminates.³⁰

In this text, it looks as though Alexander considered illumination as a mere Cambridge change, like local relations. But such a position would be difficult to defend because vision would be a relational change without any real qualitative

²⁹ Averroes's commentary on *De anima* 2.5 is of no help here, since he does not comment thoroughly on the crucial passage about the instantaneousness of change in sense perception. See Averroes, *Long Commentary on the De anima of Aristotle*, 161–62.

³⁰ Alexander of Aphrodisias, *On Aristotle On Sense Perception*, 123.

change in the medium and the organs, and eventually in the sense faculty. As Alan Towey argued against a restrictive reading, Alexander should accept that these relational changes also involve the acquisition of some real properties. Alexander's point would be only to show that the change involved in sense perception is instantaneous. But the result is a real quality, which corresponds to the actualisation of a form.³¹ The case of vision is special because it depends on the illumination of the medium and the organs, which is a relational and instantaneous change. As soon as the source of light is present, *ceteris paribus* the medium and the organs are instantaneously altered. In the case of sound or smell, the medium and the organs are successively altered in time. Therefore, hearing depends on this change, which is an alteration in the strict sense. In all these cases, to say that sense perception is the reception of a form needs some qualification.

Now, what is exactly John of Jandun's position? In his commentary on Aristotle's *Metaphysics*, book Δ, about relations, he seems to treat illumination of the medium, but also the action of the sensible qualities on the senses, as examples of "mere Cambridge changes," not only like local relations, but also like relations of equality:

There are two sorts of change: one is continuous and divisible, like whitening, the other is instantaneous and indivisible, like the illumination of the medium by the sun, or the change (*immutatio*) of the senses by the sensible object. Now it is true that a new relation may accrue to (*advenit*) something without any continuous change in it, as when some man is six cubits tall and another four, and the second one grows taller, reaching six cubits, equality accrues to the first one without any continuous and temporal change having occurred in him; because equality is engendered (*generata est*); [...] for, at the very instant in which the other acquires a quantity of six cubits, an equality is engendered in the first one, which he did not have before. So, when Aristotle says that something can be related <to something else> without any change having occurred in that thing, he is considering continuous and divisible change, but he does not deny that an instantaneous and indivisible change has occurred, because when a subject is maximally disposed for it, it receives an indivisible change (*mutationem indivisibilem*).³²

So, John of Jandun is certainly in agreement with the main line of Alexander's thought, but not with the details. Indeed, in his commentary on the *De sensu*, as well as in his commentary on the *Metaphysics*, he uses the classical examples of

³¹ See Towey 1995: esp. 103–21. Towey has also published a detailed analysis of Alexander's account of hearing and instantaneous change: see Towey 1991. I do not know if it is a correct reconstruction of Alexander's thesis, but it is similar in many respects to what John of Jandun will take from him.

³² "Dicendum quod duplex est mutatio: quaedam est continua et divisibilis, ut dealbatio, quaedam est instantanea et indivisibilis, ut illuminatio medii a sole vel immutatio sensus a sensibili, modo verum est quod relatio advenit alicui de novo nulla transmutatione continua facta in ipso, ut si aliquis est sex cubitorum et alter quattuor, et alter augmentatur usque ad sex cubitos, tunc aequalitas advenit illi nulla mutatione continua et temporali facta in eo, quia generata est aequalitas [...] unde in eodem instanti in quo alter acquisivit quantitatem sex cubitorum generata est aequalitas in eo quam prius non habebat. Modo quando Aristoteles dicit quod contingit aliquid referri nulla transmutatione facta in eo, intelligit de mutatione continua et divisibili, tamen non negat quin facta sit mutatio [mutatione *ed.*] instantanea et indivisibilis, quia subiectum, cum sit summe dispositum, recipit mutationem indivisibilem." (John of Jandun, *Quaestiones in Metaphysicam*, q. 23, f. 67vb.)

relational changes only to illustrate the relational feature of some changes and their instantaneousness. But he affirms that the relational aspect of illumination does not imply that there is no real change at all in sense perception and in vision in particular.³³ There must be, at some point, an alteration somewhere, in the visible object, or in the source of light or in the medium. As soon as this first real alteration appears, the whole medium and the whole sense organ are instantaneously changed relatively to this first real change in the sensible object. Therefore, like Aristotle in the *De sensu*, Jandun seems to admit the possibility of an instantaneous alteration of the medium and the organ, just like a small lake can freeze instantaneously. The change that results from this kind of relation is a real qualitative change in the medium and the sense organs, not “a mere Cambridge change” as Alexander’s example seems to suggest. Indeed, Alexander is certainly right to say that seeing requires some precise positions of the *relata*, as in the case of other local relations such as being on the right of something, but this does not mean that seeing is a mere relational change. Therefore, the challenge for John of Jandun is to understand how there can be a real change in the soul which is at the same time relational, instantaneous and qualitative. A first step toward a solution can be found in his commentary on book 2 of the *De anima*.

11.4 Perception and the Reception of a Form in Jandun’s Commentary on the *De anima*

John of Jandun’s theory of perception is very complicated and it is not possible to deal with all the interesting aspects of his analysis in the present chapter. For example, Jandun believes, like Averroes, in the existence of an agent sense for sensation, which is the equivalent of the agent intellect for intellection. He argued at length for this thesis against his colleague Bartholomew of Bruges (1286–1356), both in a

³³ “Item, potest probari alia ratione, quia illa alteratio fit in instanti, cuius extrema sunt immediata sibi invicem; nam pro tanto est successio in alteratione, quia extrema distant adinvicem per media; et cum plus distent per media, maior est successio ceteris paribus; et de calido in frigidum tardior est alteratio quam de tepido in frigidum. Sed ita est, quod extrema in istis alterationibus sunt immediata, quare etc. [...] Est tamen intelligendum quod quamvis luminosum aut coloratum praesens visui et medio in instanti faciat suam speciem in medio et in organo, ita quod non est aliquod corpus medium inter praesentiam visibilis et generationem vel existentiam speciei in diaphano, tamen si aliquod visibile, quod prius non faciebat suam speciem in aliquo diaphano, nunc facit suam speciem in illo diaphano, oportet quod aliqua transmutatio fuerit facta, vel in visibili, vel in illo diaphano, vel in utroque; si enim nulla transmutatio fuisset in aliquo ipsorum, tunc eodem modo se haberent adinvicem; et sicut prius non agebat unum in alterum, ita nunc non aget, et sicut nunc agit, ita prius agebat; verbi gratia, si sol nunc illuminat aerem, cum prius non illuminaret, oportet vel quod sol prius non esset praesens, et praesentiam istam acquisivit per aliquem motum, vel quod medium nunc sit dispositum, et non erat prius, vel quod impedimentum sit remotum; et omnia ista requirunt transmutationem aliquam.” (John of Jandun, *Quaestiones super librum De sensu et sensato*, q. 31, f. 21vb.)

separate treatise (*De sensu agente*) and in his commentary on the *De anima*.³⁴ This particular feature of his doctrine already gives some important specifications to his theory, in so far as sense perception cannot be purely passive and cannot be the mere reception of a form. Jean-Baptiste Brenet has analysed in detail this aspect of Jandun's theory of cognition, and he pointed out that the agent sense does not produce the *species* in the mind, but acts upon the *species* present in the sense organ, which is received from the external world.³⁵ The agent sense makes this sensible *species* a representation of the sensible object and this very act is called "sense perception."

What is more, John of Jandun believes, like Averroes, but in his own fashion, in the separability and unicity of the intellect, and these ideas must be taken into account in a general survey of his theory of the sensitive soul.³⁶ As a consequence, even if the individual sensitive soul plays a crucial role in human cognition, it is the very first step towards the intellection of universals by the intellect. Indeed, the agent intellect is related to the sensitive soul by the cogitative faculty and imagination, not directly to the senses. Sense perception is therefore autonomous, so to speak, and for this reason its function is to actualise some forms in the sensitive soul, with the help of the agent sense, in order for them to be stored, analysed, and judged by higher faculties, before the intellect abstracts from them a universal form. Therefore, these issues concerning imagination, cogitation, and intellection can be set aside in this context, because they are less relevant for Jandun's conception of the nature of change in sense perception. Here, as I said, I will focus on the nature of change involved in the reception of the sensible form in the sense organs and in sense perception more generally.

In his commentary on *De anima* book 2, John of Jandun dedicates an entire question to a topic that is very similar to the one debated by Sorabji, Nussbaum, and Putnam: is the reception of a sensible form essentially identical to sense perception (*Utrum species rei sensibilis recepta in sensu sit idem essentialiter cum ipso sentire*)? His answer is clearly negative. The main argument is that the reception of the sensible form is a "quasi-alteration" and thus belongs to the category of quality, whereas sense perception (*sentire*) is in the category of action or activity—here we see the importance of his thesis about the agent sense. In his own words:

[T]he sense is altered by the sensible, at least by a perfective alteration (*alteratione perfectiva*), which is a good state (*salus*) and a perfection (*perfectio*), as it is posited here in book 2 and in the *Physics* book 7. It is obvious that the sense receives a quality from the sensible, at least a spiritual one, and it is nothing but the species of the sensible form, which represents this sensible. Sense perception, however, is a certain action [...].³⁷

³⁴ See Pattin 1988.

³⁵ Brenet 2014.

³⁶ See Brenet 2003.

³⁷ "[...] cum ipse sensus alteretur ab ipso sensibili saltem alteratione perfectiva, quae est salus et perfectio, ut habetur in isto 2 and in 7 *Physicorum*, manifestum est quod sensus recipit a sensibili aliquam qualitatem, saltem spiritualement, et illa non est nisi species formae sensibilis, quae ipsum

On the basis of this, John of Jandun accepts a part of the spiritualist interpretation, but he adds the action of the soul, which is the sense perception properly speaking.

Jandun's second argument is that if sense perception were identical with the reception of the sensible form, then the medium or a mirror could be said to perceive. This is evidently not the case and this is why a certain disposition is needed in the sense faculty, thanks to which it is related in a certain way to the sensible. More precisely, a certain kind of activity is needed in the senses, since they are not altered by a real alteration, but by a "perfective alteration."

More details can be gathered from other questions on book 2. For instance, when Jandun asks whether the sensible acts upon the sense faculty (in q. 34, *Utrum sensibile agat in sensum*), he affirms that the sensible acts on the sense in so far as it draws the sense out of its potency to act; but the reception of the species only prepares sensation, inasmuch as there is no sense perception without the presence of a sensible object.³⁸ This could help us to understand what he means by a "perfective alteration" in the text quoted above. It is an activity, but Jandun suggests that it is also a passion. Indeed, as he says in question 14, the sense faculty is considered as passive when it is actualised by the presence of something, but this passion is not like the passion of something that is really altered by the replacement of a quality by another contrary quality.³⁹ A perfective alteration is therefore defined as the actualisation of something without the destruction of a previous contrary quality. Finally, we find exactly the same definition of a "perfective alteration" in Jandun's commentary on book 7 of the *Physics*.⁴⁰ What Jandun is pointing out here is that sensation is an immanent activity, as he repeatedly says, which is only triggered by the presence

sensibile representat. Sentire autem est actio quaedam [...]. (John of Jandun, *Quaestiones super libros De anima*, q. 31, col. 198.)

³⁸ "Dico ad quaestionem quod sensibile est per se activum in sensum, quia illud quod per sui naturam reducit aliquid ad suum actum per se est activum in ipsum [...] sed ipsum sensibile extrahit sensum de potentia ad actum, sicut agens dispositum imprimendo ei suam speciem, qua praeparatur ad sensationem [...]. (John of Jandun, *Quaestiones super libros De anima*, q. 34, col. 207.)

³⁹ "Quaedam est passio proprie dicta et est receptio perfectionis cum abiectioe contrarii, et dicitur passio corruptiva, ut cum ignis appropinquatur aquae ipsa aqua patitur ab igne, quia ab ipso recipit aliquam perfectionem, scilicet caliditatem cum abiectioe contrarii, scilicet frigiditatis [...]. Alia autem passio, quae dicitur improprie dicta, scilicet receptio perfectionis absque corruptione contrarii, et haec dicitur passio perfectiva, et quae dicitur salus et perfectio, ut cum diaphanum illuminatur ab aliquo corpore luminoso, ibi enim est sola receptio perfectionis ab illuminante corpore absque abiectioe contrariae dispositionis, quia lumini nihil est proprium contrarium." (John of Jandun, *Quaestiones super libros De anima*, q. 14, col. 122.)

⁴⁰ "Intelligendum est etiam quod duplex est alteratio. Una est que est permutatio de una qualitate ad aliam qualitatem contrariam, ita quod non solum acquiritur aliqua qualitas in alterabili, sed etiam removetur vel abicitur qualitas contraria inexistens in eo, ut cum ignis calefacit aquam, et sic in similibus; et hec vocatur alteratio proprie dicta. Alia est que est mutatio ad aliquam qualitatem sine obiectione contrarii preexistentis in passo, ut corpus luminosum presente diaphano ipsum alterat illuminando, non tamen abicit aliquam qualitatem preexistentem contrariam, quia lumini nihil est contrarium proprie, et consimilis alteratio contingit in omnibus virtutibus anime cognoscitivis, anime dico humane, sicut patet ex 2° et 3° *De anima*. Et dicitur alteratio improprie dicta, que est salus et perfectio. Primam etiam vocant aliqui alterationem corruptivam. Secundam vero perfectivam et bene." (John of Jandun, *Quaestiones in libros Physicorum* 7, f. 112rb–va.)

of the sensible (that is, its real presence in the medium in the case of sounds or odours, and by the relational change of the medium and the organs in the case of light and colours).

In another question (q. 15), Jandun asks whether the sensible draws out the sense from potency to act (*Utrum sensibile reducat sensum de potentia ad actum*). In his answer, he distinguishes between a first and a second act or actuality of the senses.⁴¹ Sense perception is the second act of the sense faculty, and it needs an active faculty (the agent sense) to be actualised, whereas the reception of the form is only the first act or actualisation of the senses. In other words, the reception of a spiritual form is only the first step in the process of perception. It is a first actualisation of the sense organs, but the very act of perception is a second-order activity in the soul. For this reason, whatever change occurs in the medium and the organs (instantaneous and successive), what is actualised in the sense faculty is not sense perception yet.

These texts illustrate very well the main characteristics of John of Jandun's theory of sense perception. As Jean-Baptiste Brenet has shown, the three important features are the following: (1) the soul cannot be affected only passively; (2) in all cognitive processes, one has to distinguish the reception of a *species* and the act of cognition; (3) in all perceptions there is one cause that prepares or disposes (*disponens*) this perception, and another that perfects it (*perficiens*).⁴² When the sensitive soul is disposed by the reception of a sensible form, an immanent activity of the sensitive faculty is actualised, and this qualitative change in the soul is distinct from the reception of the form and its presence as a spiritual form. It is both a relational and a qualitative change that results from a preparatory and physical process.

Now it remains to answer the question about the nature of the relational change involved in sense perception. In his commentary on the *De sensu* 6, John of Jandun seems to follow Alexander's theory of vision: the species of visible forms are produced instantaneously, for they are the result of a relation like being on the left of something. But, as we have just seen, he also says in other texts that it is a "quasi-alteration" and that a sensible form is received, at least as the actualisation of a natural potency. In order to get a clearer picture of Jandun's position, let us now turn to his commentary on book 7 of the *Physics* where he deals with the nature of alteration and relational changes.

⁴¹"Ad quaestionem intelligendum est quod ipsius sensus est duplex actus, scilicet primus actus et actus secundus. Actus quidem secundus est eius operatio, scilicet sentire, et hoc dicit Aristoteles in littera sic. Et sentire autem secundum simile dicitur ipsi considerare, scilicet in hoc quod utrumque est quidam actus secundus. Actus autem primus est forma existens in sensu preexistens operationi, et est illa species rei sensibilis repraesentans ipsum sensibile [...]. Tunc dico ad quaestionem duo: primo quod sensibile reducit sensum de potentia ad actum primum; secundo quod ipsum non reducit sensum ad actum secundum sine naturali virtute activa animae." (John of Jandun, *Quaestiones super libros De anima*, q. 15, col. 126.)

⁴²Brenet 2014: 38.

11.5 Instantaneous Qualitative Changes in *Physics* 7.3

In the book 7 of the *Physics*, Aristotle primarily deals with alteration. He first shows that alteration is limited to sensible qualities, but in Chap. 3, he wonders whether qualities which are not sensible, such as states (ἔξεις), dispositions (διάθεσις), and capacities (δυνάμεις), but also figures (σχήματα) and shapes (μορφαί), are subject to alteration. His general thesis is that they are not, even though they do not exist without alteration. They seem to be alterations, as far as they correspond to changes in the category of quality, but in fact they only follow, as an end, from an alteration. They are not alterations for several reasons: they are not sensible, they occur without contact, and they seem to be instantaneous.⁴³ But the main reason is that they fall under the category of relation.

Aristotle begins with shapes and figures, the production of which he considers as similar to a coming-to-be.⁴⁴ Indeed, we cannot say, logically, that the figure of the house is in itself the result of an alteration, since it appears together with its subject. Aristotle's point is that being a house is the result of a physical process, which requires many motions, including alterations, but the form of the house—the reason for which we call it a house—appears only at the very end of the construction. Being a house is the end and the perfection of this process. In the same way, states and dispositions of the body and the soul appear at the end of other physical changes, as perfections of this physical process, but they are not coming-to-be. Like figures and shapes for artefacts, they are not of the same nature as the actions or motions from which they result. They are like emergent properties coming into existence in relation to what happened in the course of previous changes.

This is the case for all excellent and bad states of the body and the soul, Aristotle says, for they are “[in the category] of relation,”⁴⁵ and are not coming-to-be. Health, for instance, considered as an excellent state of the body, is a relational quality insofar as it occurs only when the body is well tempered, after its qualities have been altered up to a state of equilibrium. The alteration of the complexion of the body takes time, but as soon as the contrary qualities of the body are well balanced, the body instantaneously acquires a new state, which is called “health.” It is the same for beauty, Aristotle continues, with respect to the organisation of the members, colours, and figures in the body. Likewise, the state of being morally virtuous is the residual habit in the soul, which is an end and a perfection, acquired relatively to actions, but also relatively to sensible pleasures and pains, which are themselves related to sense perceptions.⁴⁶

At the end of *Physics* 7.3, Aristotle suggests that being a knower is a relational quality of the intellect:

⁴³ See Morison's remarks in Maso et al. 2012: 40.

⁴⁴ *Ph.* 7.3, 245b22 sq.

⁴⁵ *Ph.* 7.3, version β, 246b20–21, 25.

⁴⁶ *Ph.* 7.3, 247a6–19.

Nor indeed is there alteration in the intellectual part of the soul: for it is asserted with great assurance that the knower is in the category of the relative. This is clear because knowledge does not arise in things, which have been changed in accordance with any potentiality, but rather through the presence of something else, since it is from experience of the particular that we acquire universal knowledge.⁴⁷

The state of knowing something intellectually is a relational change in the mind, which occurs only when something else is present, that is, when a singular thing is cognised by the senses and imagination. So, when sensible qualities are present in the sensitive soul, a universal form is instantaneously actualised in the intellect. Someone can start to be called a cogniser only at an instant, “since a man becomes knowledgeable and gains understanding by means of his soul’s coming to rest and holding still.”⁴⁸

When Averroes comments on this text, he clearly affirms that cognition is a relational state of the mind, which is actualised relatively to a previous change, in this case an alteration of the body or the sensitive soul.

And when [Aristotle] told us that faculties of understanding are in the category of relation, he said: *And it is manifest etc.*, that it to say, it is manifest from the fact that cognition does not occur in the cogniser from the change of a part of the cogniser, but from the change of something else, like in all correlatives. Indeed, one does not say that the column has changed in itself if it is put back from the left to the right, but something else [has changed], for instance Socrates, by the motion of which [the column] is now on the right of him. It is the same for cognition: it is not a cognitive part that has changed in us, but something else, which is its correlative.⁴⁹

The outline seems very similar to Alexander’s theory of sense perception as a relational change. In the next lines, when Averroes discusses Aristotle’s assertion that intellection is not a coming-to-be, he compares the intellect with the senses and affirms that the same thesis should be defended for both the sense and the intellect.⁵⁰ Averroes also illustrates the relational change in the intellect with the reflection of light in a mirror: when the iron is well polished, as soon as light comes in it instantaneously reflects light. In the same way, as soon as the sensitive soul is well prepared, the possible intellect is instantaneously illuminated by the agent intellect.⁵¹ At a lower level, sense perception corresponds to the actualization of the sensible faculty in connection with the changes that occurred in the medium and the organs.

⁴⁷ *Ph.* 7.3, version β, 247a28–b21, trans. Wardy 1990: 59–61.

⁴⁸ *Ph.* 7.3, version β, 247b23–24.

⁴⁹ “Et cum narravit quod virtutes comprehensivae sunt de genere ad aliquid, dixit: *Et hoc manifestum est etc.*, id est et hoc manifestum est eo quod cognitio non fit in cognoscente ex transmutatione partis cognoscentis, sed ex transmutatione alicuius alterius, sicut est in omnibus correlativis. Non enim, si columna reversa est dextera, quae prius erat sinistra, dicitur transmutari in se, sed aliud, ut Sortes, quo moto facta est dextera respectus eius. Et similiter est de cognitione, non quidem pars cognoscens transmutatur in nobis, sed aliud aliquid, quod est eius correlativum, transmutatur.” (Averroes, *Commentarium magnum in Aristotelis Physicorum*, 47.)

⁵⁰ Averroes, *Commentarium magnum in Aristotelis Physicorum*, 48.

⁵¹ I have analysed Jandun’s interpretation of Alexander of Aphrodisias and Averroes about the relational aspect of intellectual thoughts in Robert 2016.

11.6 Conclusion

In his commentary on the *Physics*, John of Jandun is in agreement with Aristotle that dispositions and states of the body and the soul are not alterations properly speaking, but instantaneous changes, which are both relational and qualitative (that is, new qualities are actualised in the body and the soul after some real alterations). Unfortunately, he says nothing about sense perception in that context. However, it is tempting to draw a parallel here, since Jandun frequently refers to *Physics* 7 in the texts that we have commented upon earlier, and because he frequently compares the senses and the intellect.

According to my reading, what we call sense perception is an instantaneous change in the soul that happens relatively to other changes in the sensible object, the medium and the organs. It is a change that perfects a cognitive power when this power has been duly prepared. In the case of sounds and odours, sense perception depends on a change that occurs relatively to real local motions in the medium and their effects on the sense organs. In the case of light and colours, it is a kind of second-order relational change: the reception of a spiritual form in the medium and the organs gives rise to a first relational and qualitative change, relatively to which a second act can be actualised if all the conditions are fulfilled. Exactly like the agent intellect functions as a mirror, according to Averroes, and immediately sheds light on the phantasm in order to produce an intelligible form, we can imagine that for John of Jandun the sense agent is also a kind of mirror, which is actively, though instantaneously, actualised as soon as the sense organs are passively actualised by a sensible form.

If this reading is correct, then John of Jandun offers an interpretation of Aristotle which is neither literalist (Sorabji) nor spiritualist (Nussbaum-Putnam). It comes close to Burnyeat's reading, but with the notable difference that Jandun does not deny that the relational change in the medium and the organs is in some sense a real one. Regardless of the object and the medium, in sense perception a new quality is actualised in the sensible faculty, which makes it a change both relational and real. To be sure, this new quality in the soul does not replace a previous contrary quality, as in a process of alteration, but is considered as a kind of immanent activity and perfection of the faculty, a second actualisation that is different from the mere reception of the form. For this reason, John of Jandun does not have to distinguish between vision, which depends on instantaneous illumination, and hearing or smelling, which depend on motions that take time. In all these cases, sense perception supervenes instantaneously at the end of physical processes that are distinct from sense perception properly speaking.

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Chapter 12

Alexander of Aphrodisias, Brito and Jandun: Comments on Aurélien Robert's Paper



Sten Ebbesen

Abstract This chapter discusses Alexander of Aphrodisias' explanation of the relational nature of perception and analyses John of Jandun's and Radulphus Brito's views concerning the same issue. The chapter includes a critical edition of a question from Brito's commentary on *De sensu*.

12.1 Introduction

I have tried to look at Aurélien Robert's paper from various angles to see if I could find a weak spot in his fortifications through which to send in my attacking army. I have not succeeded as far as his main thesis is concerned. Though he does not say so explicitly, the picture Robert paints of Jandun is that of a traitor inside the Aristotelian camp, a crypto-Platonist who will let the external object of sensation be no more than an occasion for the mind to do its work with the help of some illumination from above. In other words, there is no genuine transfer of information from the external object to the mind. I am afraid that the evidence adduced by Robert favours his conclusion, and so I regrettably have to classify Jandun as an adherent of a variant of the Platonic heresy.

Instead of attacking a fortress that may possibly be impregnable, I shall try to widen the discussion a little, first by considering more closely what Alexander of Aphrodisias says about habitudes and relations in connection with the passage about sight in *De sensu*, then by looking at Jandun's probable source for the relevant question in his *De sensu* commentary.

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If someone wonders what I mean by *habitudes*, I hereby warn you that I use the old-fashioned *habitude* to translate *σχέσις* and *habitudo* in order not to confuse Miss *Habitudo* with her close relative Miss *Relatio*.¹

12.2 Alexander of Aphrodisias on Habitudes and Relations

Now, what exactly does Alexander of Aphrodisias say? I will start with his comment² on the crucial passage in *De sensu* ch. 6, where Aristotle says:

Is the same thing true of colour and light <as of sound>? For it is not true that the one sees, and the other is seen, just because the two are in a certain relation (τῷ πως ἔχειν), e.g., that of equality; for in that case there would be no need for each of them to be in a particular place; for when things are equal it makes no difference whether they are near to or far from one another.³

Alexander takes this to be meant as a plausible argument against the view that seeing happens due to a certain habitude of seers to things seen.⁴

Aristotle does not, however, introduce the argument in order to endorse it as it stands, Alexander thinks, but to point out that it only works if one forgets to distinguish between different sorts of habitudes. Some, like equality in size, are independent of the local positions of the terms of the habitude; others, like being to the right of, do depend on the terms being located in a certain way. Seeing presupposes the second sort of habitude between seer and the thing seen, for they must be located in suitable ways and at a suitable distance from one another.

But then Alexander adds a most important rider:

Or rather <than simply concluding that seeing consist in a certain habitude between the seer and the thing seen, we should say that> while seeing *does require* a certain habitude, seeing *does not consist* in that habitude, as opposed to being to the right, which does consist in a habitude. A certain power to perceive the things seen must also be present, for without that the habitude is of no use for seeing. So, the shining-through is a matter of habitude, but seeing is not a matter of habitude.⁵

¹For the couple, see Ebbesen 2016: 197–215.

²Alexander of Aphrodisias, *In librum De sensu commentarium* (hereafter in *Sens.*), 127–28.

³ἴσῃ οὖν οὕτω καὶ τὸ χρῶμα καὶ τὸ φῶς; οὐ γὰρ δὴ τῷ πως ἔχειν τὸ μὲν ὁρᾶν τὸ δ' ὁράται, ὥσπερ ἴσα ἐστίν· οὐθὲν γὰρ ἂν ἔδει που ἐκάτερον εἶναι· τοῖς γὰρ ἴσοις γιγνομένοις οὐδὲν διαφέρει ἢ ἐγγὺς ἢ πόρρω ἀλλήλων εἶναι. (Aristotle, *Sens.* 6, 446b9–13, trans. W. S. Hett.) The explanatory <as of sound> is my addition.

⁴διὰ τοῦτου πιθανῶς τὸ μὴ κατὰ σχέσιν τῶν ὁρώντων πρὸς τὰ ὁρώμενα τὸ ὁρᾶν γίνεσθαι συνίστησιν (Alex., in *Sens.*, 127.5–6).

⁵ἢ δεῖται μὲν τὸ ὁρᾶν σχέσεώς τινας, οὐ μὴν ἐν τῇ σχέσει τὸ ὁρᾶν (τὸ δὲ δεξιὸν ἐν τῇ σχέσει)· ἀλλὰ καὶ δύνανται εἶναι τὴν ἀντιληπτικὴν τῶν ὁρωμένων· ἄνευ γὰρ ταύτης οὐδὲν ὄφελος πρὸς τὸ ὁρᾶν τῆς σχέσεως. διὸ τὸ μὲν ἐν τῷ διαφαίνειν καὶ κατὰ σχέσιν, τὸ δὲ ὁρᾶν οὐκέτι κατὰ σχέσιν. (Alex., in *Sens.*, 128.1–6.) In William of Moerbeke's translation (quoted from an edition in preparation by Willy Vanhamel [DWMC – Leuven]): “Aut indiget quidem videre habitudine quadam, non tamen in habitudine videre (dextrum autem in habitudine); sed potentiam quadam

Alexander speaks of *habitudes* in connection with vision on several other occasions, and sometimes it sounds as if he thought that was all there was to it, but I submit that all passages should be considered in the light of the one just discussed: a certain *habitude* of location is a necessary condition for sight, but it is not what sight consists in, so whatever Alexander thought happens to the organ of sight, his *habitude*-talk does not suffice to attribute to him the view that what occurs is a mere Cambridge change.

Robert cites a passage (*in Sens.* 134.11–19) in which Alexander first argues that light consists in a *habitude* and not in an alteration, and then compares the *habitude* to that of being to the right of something: if what is to the left of you disappears, you are no longer to the right; similarly, if the source of light disappears, the light disappears.

This is perhaps not the most happy of explanations, but notice that Alexander says nothing about the organ of sight. The passage does not rule out some sort of change in the organ. Alexander does stress that not only is the propagation of light instantaneous, but sight, and indeed all sensation is not a process in time (135.15–17). He does, however, also say that the object of vision impinges (*προσβάλλει, προσπίπτει*) on sight (135.14, 17). So *something* is happening, even if instantaneously.

Thus, in spite of some careless phrasing in some places, I think Alexander can probably be absolved from having held the totally incredible view that all there is to vision is a mere Cambridge change. I think Robert has been unnecessarily unkind to Alexander, whereas he may have been too lenient with Jandun in spite of having collected damning evidence of his heresy.

12.3 Probable Source: Radulphus Brito

Anyway, let us look at Jandun's question 31 on *De sensu*.⁶ Jandun asks "Whether the species of the objects of sight, that is light and colour, reach the medium and the sense-organ in an instant." That is, the question is not about what sort of change, if any, this may occasion in the perceiver. It is taken for granted that the species reach the medium and also the organ of sight, but the question is whether this takes time.

Then follow three *rationes principales* in favour of a temporal process.

1. Progress from one end of something to another passes through a middle, which is reached before the end, so the process is successive and takes time.

esse visibilium susceptivam; sine hac enim nichil opus est habitudine ad videre. Propter quod hoc quidem in apparere et secundum habitudinem, videre autem non adhuc secundum habitudinem."

⁶Like Robert, I use the 1557 Venice edition by Albratius Apulus, *Ioannis Gandauensis philosophi acutissimi quaestiones Super Paruis Naturalibus*. However, in the footnote immediately after this I emend the edition by drawing a couple of readings from *O* = ms Oxford, Bodleian Library, Canon. misc. 222: 34vb.

2. Motion requires time, but we here have a case of motion because the species of the objects of vision come to be in the organ of sight after not having been there.
3. The medium that receives the light was dark before receiving it. If it receives the light in the last instant of its being dark, opposites will be true of it at the same time. So it must receive it in another instant, but in that case there will be a time between the last instant of its being dark and the instant in which it receives the light, as there is a time between any two instants.

Now, it is well known that medieval philosophers tend to borrow *rationes principales* from their predecessors, and in this case we can point out a likely source. Radulphus Brito, an important arts master in the 1290s and probably still teaching the arts some time into the next decade while studying theology, is the presumed author of a question commentary on *De sensu* that is only preserved in one manuscript (Firenze, BNC, Conv. Soppr. E.I.252), whose text is less than sound in many places; mostly, however, it is possible to make sense of it. The text is anonymous, but personally I have no doubt that it is by Brito. The relevant question is printed as an appendix, below.

Jandun's first *ratio quod non* is Brito's third, his second argument is Brito's second, and his third is Brito's fourth. Both have just one *ratio ad oppositum*, and both appeal to Aristotle in the text commented on, but Jandun adds a reference to *De anima* 2.

Jandun's determination falls in five parts. The first runs:

The species of the objects of sight come to be instantaneously in the media and in the organ, for things whose being is consequent upon a mutual habitude of certain things come to be instantaneously, because a habitude is a relation, as is obvious, and a relation is not acquired in time, as is clear from *Physics* VII, and consequently <the same holds for> that which is consequent upon a relation; but the species of the objects of sight are consequent upon a habitude, namely the placing of a luminous or coloured body in front of something diaphanous which is receptive of light or colour etc. This argument is taken from Alexander's commentary. He uses 'to the right' as an example.⁷

This is pretty close to a part of Brito's determination. He says:

This <i.e. that the species comes to occupy the medium in an instant> is proved by means of Alexander's argument, which is that what comes to be in something not through a change (*transmutatio*) of it but through a mere relation and by something being placed next to it, comes to be in an instant and not in time. Thus a column comes to be to the right of some-body without any change (*transmutatio*) in him but merely by being placed next to him and by an <ensuing> relation to him, and therefore the change in the column comes to be in an

⁷"Dicendum quod species visibilium fiunt in instanti in mediis et in organo, quia quorum esse consequitur habitudinem aliquorum adinvicem, illa sunt in instanti; habitudo enim relatio est, sicut est manifestum; et relatio non acquiritur in tempore, ut patet 7 *Physic.* et per consequens illud quod relationem consequitur; sed species visibilium consequuntur {consequuntur *O*: consequitur *ed.*} habitudinem, scilicet oppositionem {fortasse appositionem scribendum coll. *quaestione Radulphi*; operationem *O*} corporis luminosi, aut colorati, ad diaphanum luminis, aut coloris susceptivum; quare etc. Et haec {h. *O*: *om. ed.*} ratio sumpta est ex commento Alexandri, et exemplificat de dextro." (John of Jandun, *Quaestiones super librum De sensu et sensato*, q. 31, f. 21va–vb.)

instant. Now, light comes to be in the medium not through a change (*transmutatio*) of it but through the mere placing of a luminous body next to the medium.⁸

There seems to be a little confusion here about who moves, the man or the column, but the general idea is clear enough.

The second part of Jandun's determination claims that whenever a potential recipient of a form is optimally disposed for receiving it, the form will be instantly actualized at the presence of the proper agent.⁹ This argument is not found in Brito's determination, but it is found in his answer to the fifth *ratio principalis*.

The third part of Jandun's determination argues that if the species came to be successively in the medium and the organ, then we would see things faster the closer they are to us.¹⁰ This has no counterpart in Brito.

Jandun's fourth point is that an alteration must be instantaneous if its *terminus a quo* and its *terminus ad quem* have nothing between them. But this is exactly the situation with a change from darkness to light: the two are privatively opposed, there is no middle thing.¹¹ Here Jandun might have done us the favour of explaining his views on twilight, but anyway, the argument is also found in Brito.

The fifth, and last part of Jandun's determination is the section, also commented on by Robert, in which Jandun makes clear that he does not intend to deny that *some* change must be assumed in connection with the species's coming to be in the diaphanous medium – some change either in the object of vision or in the medium or in both. This final section has no match in Brito's text. Notice, by the way, that it does not mention a possible change in the sense organ. Both Brito and Jandun concentrate so much on what happens to the medium that they tend to forget the eye.

Jandun's answers to the two first *rationes principales* differ from Brito's. To the third, about the passage from darkness to light, he follows Brito in pointing out that it rests on the wrong presupposition that there is a last instant of darkness.

We cannot be sure that Jandun used Brito, but if not, he used a work by Brito's twin brother. The comparison allows us to see Jandun in his historical setting and offers a partial explanation of why he focuses on the points he focuses on.

⁸ "Item, hoc probatur ratione Alexandri sic, quia illud quod fit in aliquo non per transmutationem ipsius sed per solam relationem et appositionem ad ipsum fit in instanti et non in tempore. Sic columna fit dextra alicui sine transmutatione in ipso per solam appositionem et relationem ad ipsum, unde mutatio columnae fit in instanti; sed lumen fit in medio non per transmutationem ipsius sed per solam appositionem corporis luminosi ad ipsum medium; ideo etc." (Radulphus Brito, *Quaest. Sens.*, qu. 24.) For the context of this extract, see the full text of the question in the appendix.

⁹ "Item, quandocumque aliquod susceptivum est optime dispositum ad formam aliquam, praesente agente fit illa forma in instanti et educitur de potentia illius susceptivi; [...] nunc autem medium et organum est optime dispositum de se ad luminis et coloris intentionem recipiendum [...]" (John of Jandun, *Quaest. Sens.*, 21vb).

¹⁰ "Item, si species visibilium fierent in medio et in organo successive, tunc citius videremus propinqua quam remota; falsum hoc, ergo primum. [...]" (John of Jandun, *Quaest. Sens.*, 21vb).

¹¹ "[...] illa alteratio fit in instanti cuius extrema sunt immediata sibi invicem [...]" (John of Jandun, *Quaest. Sens.*, 21vb).

Appendix

<Radulphus Brito>: *Quaestiones super librum De sensu et sensato*

Ms. Firenze, Biblioteca Nazionale Centrale, *Conv. Soppr.* E.I.252: 213vA–214rA.

Quaestio 24. Utrum lumen se faciat in instanti in medio.

Consequenter quaeritur utrum lumen se faciat in instanti in medio.

1. Arguitur quod non.

1.1. Quia quod factum est prius fiebat; sed lumen factum est aliquando in medio, ergo prius fiebat; sed quod factum est et prius fiebat fit successive; ideo etc. Maior patet, quia factum esse est terminus¹² fieri.

1.2 <Item, quod acquiritur per transmutationem acquiritur successive; ***>

1.3 Item, de extremo ad extremum non venit nisi per medium; modo lumen procedit de extremo medii ad extremum; ergo prius attingit medium quam alterum extremum, et per consequens movetur successive.

1.4 Item, antquam medium fuisset illuminatum prius erat tenebrosum, quia privatio luminis in diaphano est tenebra, ut dicit Philosophus;¹³ tunc quaero utrum in eodem instanti corrupta est tenebra et lumen factum est in medio, aut in alio. Si in eodem, tunc privativa erunt simul, quia quod corrumpitur est <***>; hoc autem est inconueniens; ideo etc. Si in alio[s], statim corrupta est tenebra et lumen est multiplicatum¹⁴ in medio, et inter quaelibet duo instantia est tempus medium, cum instans non con/213vB/tinuatur instanti, ut patet 4 et 6 Physicorum;¹⁵ illud tempus erit mensura successionis luminis in medio.

1.5 Item, transfiguratio vocum littera<ta>rum fit in medio per motum localem successivam; ergo eodem modo confusio specierum visibilium fit in medio per motum successivum. Antecedens patet per Philosophum,¹⁶ et consequentia per locum a simili.

2. In oppositum est Philosophus¹⁷ qui dicit quod non est simile de odore et de lumine, ita quod vult quod lumen fit in instanti in medio.

3. Dicendum est quod lumen et species visibilis multiplica<n>tur in medio in instanti et non in tempore, et hoc declaratur signis et rationibus.

Ad cuius evidentiam sciendum est quod ex alio sumitur successio in motu locali et in motu alterationis, quia successio in motu locali recto sumitur ex parte

¹²terminus] certus F.

¹³Arist., *Sens.* 3, 439a20–21.

¹⁴multiplicatum] fere multipliacis F.

¹⁵Cf. Arist., *Ph.* 4.11, 219b33–220a26; 6.1, 231a21–b18.

¹⁶Arist., *Sens.* 6, 446b6–9.

¹⁷Arist., *Sens.* 6, 446b27.

terminorum magnitudinis super quam fit motus. Si autem haec sit circularis, attenditur ibi successio ex parte terminorum mobilis sic: in motu circulari caelesti causatur successio ex distantia partium mobilis, quia partes mobilis non possunt adaequari †bene dare† quod primus motor sit infinitae virtutis in vigore, adhuc non movet primum mobile in instanti, quia partes¹⁸ mobilis non possunt adaequari omnibus partibus magnitudinis. Sed successio in alteratione attenditur ex parte terminorum mobilis, unde quanto aliqui termini in motu alterationis magis distant, tanto magis successivus est motus. Sic plus distant album et nigrum quam album et pallidum;¹⁹ ideo est maior motus ab illo in nigrum quam ab albo in pallidum.

Hoc viso dico quod immutatio speciei visibilis fit in medio in instanti, quia illorum alteratio fit in instanti in medio quae fit ab extremo in extremum sine medio; sed immutatio speciei visibilis est huiusmodi; ideo etc. Maior patet, quia successio in motu alterationis attenditur ex parte distantiae terminorum mobilis. Minor patet, quia lumen non habet contrarium sed privationem; modo privatio est negatio in subiecto apto²⁰ nato, contradictio autem est cuius secundum se non est medium, et ita privationis et habitus in subiecto apto nato non est medium, et ita cum amovetur tenebra a medio per corruptionem eius, in instanti se facit lumen in medio.

Item, hoc probatur ratione Alexandri²¹ sic, quia illud quod fit in aliquo non per transmutationem ipsius sed per solam relationem et appositionem ad ipsum fit in instanti et non in tempore. Sic columna fit dextra alicui sine transmutatione in ipso per solam appositionem et relationem ad ipsum, unde²² mutatio columnae fit in instanti; sed lumen fit in medio non per transmutationem ipsius sed per solam appositionem corporis luminosi ad ipsum medium; ideo etc.

Item, hoc arguitur per rationem Alberti,²³ quia illud quod in quantum est in aliquo consequitur finem motus habet fieri in instanti; sed lumen existens in medio consequitur finem motus corporis luminosi; ideo etc. Maior patet, quia finis motus fit in instanti. Minor patet, quia in quocumque puncto existit corpus luminosum statim illuminatur medium in instanti.

Item, hoc arguitur per oppositum ad signum Philosophi, quia Philosophus dicit²⁴ quod sonus et odor non multiplicantur in medio in instanti, quia illi qui magis prope sunt corpori odorifico et sonoro prius sentiunt odorem et sonum quam illi qui magis distant; sed aequaliter omnes percipiunt lumen, dummodo corpus luminosum sit

¹⁸ partes] pot(est) F.

¹⁹ pallidum] pa()dum F; item infra.

²⁰ apto] apte F.

²¹ Alexander Aphrodisiensis, in *Sens.*, 127–28, 132.

²² unde] non F.

²³ Cf. Albertus Magnus, *De sensu et sensato* I.iii.2, 98b–99a: “De lumine autem alius sermo est: in eo enim quod ad aliquid est, lumen est, non quidem quod sit relativum, sed est ad aliquid eo quod semper est alicuius. Id autem cuius est motus localis luminosi corporis et illius finem consequitur illuminatio perspicui sicut effectus sequitur causam. Quod sic probatur. Ex praedictis enim constat quod perspicuum nullam habet contrarietatem, sed secundum naturam est ante contraria in corporibus perspicuis.”

²⁴ Arist., *Sens.* 6, 446a24–25.

aequaliter in eorum hemisphaerio; eodem modo est de multiplicatione coloris in medio.

Ad 1. Tunc ad rationes.

Ad 1.1 Ad primam. “Illud quod factum est etc”: dico quod aliquid esse factum est dupliciter: uno modo per transmutationem illius in quo factum est, alio modo per transmutationem factam in alio; modo illud quod factum est primo modo prius fiebat, sed secundo modo non oportet. Et cum dicitur “lumen factum est”, verum est – per transmutationem factam in alio, sc. in corpore luminoso, et non per transmutationem factam in medio in quo factum est.

Ad 1.2 Ad aliam. “Quod acquiritur per transmutationem acquiritur successive”: verum est – si acquiritur per transmutationem eius in quo est, sed si acquiritur per transmutationem factam in alio et quae sit ad **/214rA/** aliam formam, non oportet; modo lumen acquiritur in medio per transmutationem factam in corpore luminoso et non in medio, quae transmutatio facta in corpore luminoso non est propter lumen sed propter aliud, sic<ut> transmutatio in generatione non est propter formam substantialem sed propter dispositiones accidentales impediennes introductionem formae substantialis in materia.

Ad 1.3 Ad aliam. “De extremo etc.”: verum est – de extremis quae sunt extrema in motu alterationis, ut dictum fuit prius, sed non extrema mobilis. Modo licet medium illuminatum habeat extrema motus, tamen non habet extrema in motu alterationis ipsum lumen in medio, quia non habet contrarium, ut dictum est, immo est aer summe dispositus ad receptionem luminis.

Ad 1.4 Ad aliam. “Medium illuminatum prius erat tenebrosus”: verum est; “et tenebra est corrupta, da ergo instans ultimum in quo illa †ratio† tenebra corrupta est”. Illa ratio supponit falsum, quia Philosophus vult 8 Physicorum²⁵ quod in corruptione non est dare ultimum instans in quo possit dici forma quae corrumpitur non esse, sed in toto tempore praecedenti forma illa corrumpebatur et in ultimo instanti illius temporis introducebatur forma generanda.

Ad 1.5 Ad aliam. “Transfiguratio vocum litteratarum supponit et arguit sonum esse per motum successive in medio, ergo eodem modo confusio specierum visibilium in videndo debet arguere species visibiles multiplicare se in medio successive”: dico quod non est simile, quia illa transfiguratio fit in medio propter successivum motum aeris deferentis speciem vocum ad organum auditus, et ideo per transfigurationem vocum litteratarum possumus [[ad]] arguere sonum multiplicare se successive, quia, ut patet 2 De anima,²⁶ in illa parte aeris intercepta inter corpus pecutiens et percussus est sonus; modo illa pars aeris impellit aliam, et illa aliam successive usque ad auditum, et propter hoc plures insimul loquentes impediunt se invicem, quia partes aeris deferentes intentionem soni sive vocum diversorum obviant sibi invicem, sicut patet de lapide proiecto in aquam quod facit quosdam gyros quousque deficiat virtus proicientis; sed si aliquis alter proiciat ex opposito alium lapidem, una gyratio impedit aliam. Aliquando autem fit transfiguratio

²⁵ Arist., *Ph.* 8.8, 263b9–15.

²⁶ Arist., *de An.* 2.8, 419b4sq.

vocum in medio propter distantiam audientis a vociferante, quia motus localis aeris in delatione soni est violentus quodammodo, sic<ut> in motu projectorum, et ideo secundum virtutem maiorem vociferant<is> auditur sonus ad maiorem vel minorem distantiam, et propter istam causam, cum aliquis distat a vociferante auditur sonus et non vox. Sed confusio specierum visibilium est propter aliud quam propter motum successivum, quia †u(b)i p(rae)d(e)† determinata est distantia a qua unumquodque sensibile per medium extraneum sentitur, et ideo ista confusio est propter debilitatem virtutis visivae in videndo visibile de longe, quia agens fortius imprimit speciem suam in partem sibi propinquam quam remotam, unde pars medii quae magis est propinqua corpori luminoso est magis illuminata.

Consequenter advertendum quod odor ad aliquam distantiam fit in instanti, ad aliquam non. Unde in motu alterationis alteratio aliquando fit in instanti, aliquando autem in tempore; unde quando virtus alterationis potest sic operare super alterabile quod potest ipsum sic alterare quod est summe dispositum ad receptionem alterantis, tunc alteratio fit in instanti, sic<ut> quando aliqua aqua est [[ista]] ita frigida quod est summe disposita ad congelationem in instanti congelatur, ut dicit Philosophus;²⁷ quando autem non est sic disposita, tunc una pars congelatur, et illa congelata congelat aliam et sic de aliis, et tunc congelatio fit in tempore. Et ita dicendum est de <o>dore.

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²⁷ Arist., *Sens.* 6, 447a1–6.

Chapter 13

Attention, Recognition, and Error in Nicole Oresme's Psychology



Christophe Grellard

Abstract The aim of this study is to examine how Nicole Oresme (c. 1320–1382) addresses the problem of perceptual error both in his Aristotelian commentaries of the year 1340 and in the later *Quodlibeta* (c. 1370). Oresme's solution is deeply influenced by both the Avicennian and Perspectivist traditions, but, relying on the idea of the internal sense as a capacity for judgment and quasi-reasoning (*discursus*), he tries hard to point out both the role of habits and customs on one hand, and the role of attention on the other, in the process of perception and in the production of perceptual errors. Oresme's insistence on the activity of the soul in perception allows us to label his psychology as a constructivist psychology.

13.1 Introduction

The aim of this study is to examine the limits of a mechanical or passive conception of perception involved in the idea of a “mechanism” of sense perception. The usual position in medieval psychology is to describe, in an Aristotelian fashion, the mechanism of sense perception or sensation as a case of a passive power being moved by an external object. Against such a theory, I would like to present the case of Oresme's psychology, which draws attention to the activity of the perceiver, through his capacity to direct his attention towards certain kind of object, and his ability to anticipate the reception of sensory data and to take an active part in the recognition of the grasped objects. For this, I will consider Oresme's psychology over the course of his career—that is, both in his commentaries on Aristotle produced in the context of the Arts Faculty, and in his later works, produced in a non-scholastic

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environment.¹ As we shall see, there are some slight but significant changes in his conception of the mechanism of perception, and these changes can be seen as an attempt to elaborate something like a proto-constructivist psychology, that is, a psychology where the soul plays an active role in the construction of the perception, mainly through the intensity of attention.

At the heart of Oresme's psychology, there is a reflection on the mechanism of error (not only perceptual error), as is clearly explained at the beginning of the so-called *De causis mirabilium* (actually a part of his *Quodlibeta*).² Undoubtedly, this concern is related to his struggle against the astrologers and more generally against the superstitions at Charles V's court. But it also has older and deeper roots we can already see in his scholastic works. Oresme had a real interest in the problem of perceptual error from the very beginning of his career. This interest could probably be understood in relation to his fallibilist epistemology,³ but there is also the conviction that accounting for the way in which errors, and notably perceptual errors, occur may inform us about the very mechanism of our cognition. In other words, the understanding of such phenomena makes explicit some implicit but necessary conditions for our knowledge. In his early work, produced at the Arts Faculty in the 1340s, Oresme deals at length with the problem of perceptual errors, both in the *Questions on the Soul* (c. 1348; hereafter *QDA*)⁴ and in the *Questions on the Physics* (c. 1347; hereafter *QP*)⁵ as well as in some other minor works. In these works, he seems to be mostly influenced by the solution of the so-called Perspectivists, which was inherited from Alhazen.⁶ However, the consideration of some particular questions, like the perception of movement, leads him to add some new elements in order to explain the errors of perception. I will begin with a brief analysis of the *QDA*, where Oresme explicitly addresses the problem of perceptual error, and then I will consider the case of movement and the consequences it has for Oresme's account.

¹I will leave aside the works directly written in French. On this part of Oresme's work, see Grellard 2012. On Oresme's career, see a recent synthesis in Lejbowicz 2014.

²Hansen 1985: 26–48.

³I defend a fallibilist reading of Oresme theory of knowledge in Grellard 2014b.

⁴Nicole Oresme, *Quaestiones in De anima*, ed. Patar 1995. In the early fourteenth century, the debate on perceptual errors focuses on Peter Aureol's solution (the *esse apparens*) in his theological work. This solution was criticized by William of Ockham and Walter Chatton (and later Adam Wodeham) in Oxford. This Oxonian debate is known in Paris in the 1330s as it is witnessed by Nicholas of Autrecourt (see Denery 2005). But Oresme seems not to be aware of (or at least not interested in) this debate. Let us recall that in the 1340s when he lectures on the *De anima*, he is a young arts master and not yet a theologian.

⁵Nicole Oresme, *Questiones super Physicam*, ed. S. Caroti et al. 2013.

⁶On Alhazen's influence on medieval Latin philosophy, see Lindberg 1976: 58–86 and Tachau 1988: 3–16.

13.2 The Causes of Perceptual Errors in Oresme's Scholastic Works

Within the context of fourteenth century Parisian epistemology characterized by the debate between John Buridan and Nicholas of Autrécourt on the certainty of our knowledge, Oresme pays careful attention to the psychological conditions of deception and error in epistemological processes.⁷ In his very early works, the aforementioned question-commentaries on the *De anima* and the *Physics*, he devotes many questions to epistemological topics, and to cognitive errors in particular. As is well known,⁸ Oresme's theory of perception relies on both Avicenna and Alhazen. Oresme defends the role of the species *in medio*, and the thesis of the multiplication of the species from the external thing to the external and internal senses. But the soul takes an active part in this phenomenon. Since these phenomena of visual or auditive perception are very rapid, it is difficult to identify each of their components; yet the case of perceptual error makes the analysis of perception easier. For Oresme, the mechanism of error makes clear for us some features of perception, which are only implicit in normal circumstances. The best account of the mechanism of the perceptual error appears in the *QDA*.

13.2.1 Sensation as a Judgment

Nicole Oresme's account of perceptual errors, in the tenth question of the second book of *QDA*, relies on a key assumption: there is no cognition at the level of the external senses, but only at the level of the internal senses.⁹ This assumption has two important consequences. First, perceptual error exclusively concerns the level of the internal senses. Second, this cognition is already a judgment, that is, a mental assertion which predicates a quality of a subject (every *notitia sensitiva* is a composed one). These two theses explicitly depend on Alhazen's *Perspectiva*:

We have to know that an external sense never cognizes anything without the cognition of an internal sense. Rather, these cannot be distinguished, as it appears in the second book of the *Perspectiva*. And properly speaking, the external sense does not cognize; the internal sense cognizes by the mediation of the external one. Secondly, we have to know that such cognition is a kind of judgment by which something is judged to be white or black.¹⁰

⁷On this debate, see Grellard 2005, Perler 2006, and Biard 2012.

⁸See Marshall 1980: 64–72; Gagnon 1993; Serra 2014.

⁹On the Arabic origins of medieval conceptions of internal senses, see Wolfson 1935 and Black 2000; on Buridan, see De Boer 2014.

¹⁰“[...] sciendum est quod nunquam sensus exterior cognoscit aliquid quin cum hoc sit cognitio sensuum interiorum, immo ista sunt inseparabilia ut patet in II^o Perspectivae. Et proprie sensus exterior non cognoscit, sed interior mediante exteriore. Secundo sciendum quod talis cognitione dicitur esse quoddam iudicium per quod iudicatur aliquid est album aut nigrum, etc.” (Oresme, *QDA*, 192.)

The judgment of the internal senses is divided into three kinds: general, specific, and “detailed” (*dearticulatum*). The general judgment only reaches the genus of the grasped thing (e.g. that it is a colour), the specific judgment knows the species (e.g. it is white), and the detailed judgment adds a consideration of the degrees of a quality and the circumstances, since the determination of the degree of a quality relies on a comparison with other bodies in the immediate environment. When he presents the three kinds of judgment, Oresme uses a very simple example, taken from the perception of a proper sensible.¹¹ He only wants to show how we can gain a more and more precise knowledge of a body (this body is coloured, it is white, it is only and intensively white). Oresme does not explicitly tell us there is a distinction between proper and common sensibles. But he immediately specifies that only the general judgment can occur without mental reasoning, that is, without a mental process of comparison (*per collationem et per comparisonem*), which is necessary in order to perceive the common sensible. Indeed, at the level of the specific judgment (and, *a fortiori*, at the level of the detailed one), the discriminative power (*virtus distinctiva*) may produce a brief and implicit reasoning, a *discursus*, which consists in a comparison between things. As Oresme explains in the following questions (qq. 11–15), most of our knowledge of the common sensibles depends on this reasoning involving both the data of the external senses and that of the internal senses (like memory and imagination). By describing the functioning of the internal senses in such a way, Oresme aims to give a framework for an explanation of perceptual errors.

13.2.2 *The Influence of the Persectivists’ Theory of Error*

Oresme’s solution to the problem of perceptual errors is closely related to the perspectivist theory. The problem, resulting from the fact that sometimes error does occur in our perception, is to explain how this error can take place within the general mechanism of perception, and what it tells us about this mechanism. Generally speaking, Oresme accepts Aristotle’s position that we are rarely deceived about proper sensibles, such as white and black. By contrast, we more often make errors in cases of factual knowledge concerning common sensibles, such as movement: “Third, we can say, following Averroes, that in most cases the sense is not deceived with respect to proper sensibles, whereas the sense is frequently deceived with respect to the common sensibles.”¹²

¹¹“Tertio sciendum quod quoddam est iudicium universale, quo iudicatur quod aliquid coloratum; aliud est speciale, quo iudicatur quod est album aut nigrum; et aliud est adhuc magis dearticulatum, quo iudicatur quod est tantum album vel in tali gradu.” (Oresme, *QDA*, 192.)

¹²“Tertio posset dici secundum Commentatorem quod circa ista sensibilia propria sensus non decipitur in maiore parte, hoc est quod pluries sensus decipitur circa sensibilia communia.” (Oresme, *QDA* 2.10, 195.)

Indeed, deception mainly occurs when we introduce the consideration of the very nature of a thing, like its degree of whiteness or its exact quantity. Hence, finally, only the universal judgment can escape deception. Perceptual errors occur sometimes in the specific and more often in the detailed judgments. To escape perceptual error, we need to satisfy not only Themistius' classical three conditions (medium, organ and distance),¹³ but also the eight conditions that were listed in the theories of the Perspectivists.

Now, about the specific judgment, Themistius claims that in this case we are not deceived if the three conditions are fulfilled, that is, there is a correct disposition of the medium, and of the organ, and there is a relevant distance [...]. I answer that many other conditions are required in the case of the common sensibles: whence it is said in the third book of the *Perspectiva* that the mistake concerning such sensibles occurs in the sense due to the imbalance of the eight following conditions: distance, place, light, solidity (that is, firmness), size, transparency, time, healthy vision or eye.¹⁴

Themistius' three conditions cannot guarantee the perception of the common sensibles, so we need the Perspectivist's eight conditions. Undoubtedly, it is very hard to decide, either for the perceiver or for an external observer, whether all these conditions are satisfied at the moment of perception. In other words, these conditions cannot answer the skeptical challenge, which requires certainty that there is no error at the moment of perception. But the aim of these conditions, as it appears in the answers to the arguments *quod non*, is mostly to explain *a posteriori* why in certain cases perception has failed. These conditions also make clear that most of our perceptions are true, and that errors are exceptional. We may assume that the popularity of Themistius' three conditions in fourteenth century epistemology (with or without the Perspectivists' refinement) is linked to the success of reliabilist epistemology (particularly in fourteenth century Parisian psychology) which does not seek to exclude error *a priori*, but prefers to identify it *a posteriori*.

¹³Thémistius, *Commentaire du Traité de l'âme d'Aristote*, ed. G. Verbeke 1957, 132–33. Themistius' paraphrasis of Aristotle's *De anima* was translated in 1267 and widely used by Aquinas in his own commentary. In order to secure perception, Themistius claims that, first, the object has to be correctly disposed, that is, at a correct distance; second, the medium should not be disturbed; and third, the organs of the perceiver must be sound.

¹⁴"Tunc de iudicio speciali dicit Themistius quod in hoc non decipitur observatis tribus circumstantiis, scilicet quod sit bona dispositio medii et similiter organi et debita distantia [...]. Respondetur quod multae aliae circumstantiae requiruntur ad sensibilia communia: unde in III^o Perspectivae dicitur quod circa talia accidit error in sensu propter intemperantiam octo circumstantiarum, quae sunt: distantia, situs, lux, soliditas (id est firmitas), magnitudo, diaphaneitas, tempus, sanitas visui vel oculi." (Oresme, *QDA* 2.10, 194.)

13.2.3 *The Discursus of the Internal Senses and the Problem of Error*

Nevertheless, if Oresme seems to accept the scholastic commonplace about proper sensibles and the truth of most of our universal and specific judgments, he is much more reluctant to defend it at the level of the “detailed” judgment since such a judgment deals with the common sensibles.¹⁵ Therefore, this judgment is mediated and requires a *discursus*—that is, a comparison—which may cause an error. This appears clearly in questions dealing with the different kinds of common sensibles. For example, question 12 focuses on the problem of the perception of distance. The knowledge of distance, in an approximate way (since mathematical exactitude is impossible), relies on a mental reasoning which considers and combines several factors, such as the place of the bodies around the subject (*corpora interposita*), the magnitude of the angle of vision, and the comparison of these data to past visions. Closely following Alhazen, Oresme claims that for this reasoning to be certain, it needs an ordered and continuous range of bodies placed at a close distance. If one of these factors is absent, an error will occur:

We must know that, in order to be certain about the distance, three conditions are required: first, that intermediate things are ordered; second, that they are continuous; and third, that the distance is moderate. If one condition is lacking, then the sense will err when judging the distance.¹⁶

Since we know distance only in a mediated way, through a quasi-reasoning, that is, a process of comparison and inference, the combination of several parameters in the *discursus* increases the risk of error. Two points should be emphasized here: first, we may wonder, once again, whether it is possible to gather all these factors and to know that they are satisfied. Second, Oresme introduces here a new factor whose importance will emerge below: that is, the role of memory (*comparando ad visiones praeteritas*) and the *habitus* (which allows us to accelerate, and even elide some steps in the mental process).¹⁷ Let us now turn to this aspect of the problem by considering the way in which we know movement.¹⁸

¹⁵ Oresme, *QDA* 2.12, 195.

¹⁶ “[...] sciendum quod ad certificandum distantiam tria requiruntur, scilicet quod intermedia sint ordinate, secundo quod sint continua, et tertio quod sit distantia mediocris quod si aliquid defecerit, tunc sensus errat in iudicando de distantia.” (Oresme, *QDA* 2.12, 210–11.)

¹⁷ “Quinto, dico quod hoc fit discurrendo et arguendo et considerando corpora interposita et interiecta, et magnitudinem anguli sub quo res videtur, et quantum clare videtur et obscure, comparando ad visiones praeteritas, et sic multipliciter. Et ideo dicit Alhazen quod hoc facit sensus syllogizando non solum uno syllogismo, sed pluribus; verumtamen habet aliquos in habitu quod non oportet reiterare. Et simiter syllogizat in tempore imperceptibili, et valde faciliter. Et ideo homo non advertit se syllogizare.” (Oresme, *QDA* 2.12, 210.)

¹⁸ Oresme explicitly claims that there are many more common sensibles than the five enumerated by Aristotle (*QDA* 2.12, 208: “Tunc sit conclusio principalis quod sunt plura sensibilia communia quam ista quinque ad sensum expositum”). But the scholarly context of his commentary leads him

13.3 Perception of Movement: A Touchstone for the Account of Perceptual Error

The place where Oresme most carefully applies his theory of perceptual error is the question of movement. This common sensible receives a detailed and special examination in both *QP* 3.1 (likely Oresme's earlier philosophical production) and *QDA* 2.15. As we shall see, in focusing on movement, Oresme insists on the role of the problem of sensorial judgment in the production of errors. But he also introduces a new factor: habit.

13.3.1 *The Uncertainty of the Perception of Movement*

Oresme deals with the perception of movement in two texts at least, in the first question of the third book of the *Questions on Physics*, and in question 15 of the second book of the *Questions on the Soul*. In both cases, he claims with very similar arguments that we have no certain knowledge of movement.

Chronologically, the first text is probably the *Questions on Physics*. There Oresme already introduces his main thesis: we cannot have any evident knowledge of movement. If we define local movement, following Witelo, as being continuously different than before (*se habere continue aliter quam prior*), our knowledge of movement must be comparative, so that we can suppose the apprehension and relation of a plurality of past and present things. As Oresme explains, such knowledge cannot depend only on the external senses, but needs the help of the *virtus distinctiva*, that is, of the internal senses: "And the external sense does not know such things precisely, but it does with the help of the discriminative power, which Aristotle calls the common sense, and this also appears clearly in the *Perspectiva*."¹⁹

Sight alone perceives a body in a place at the present moment, t_n . But knowing that this body was in another place at the moment t_{n-1} requires memory. For this reason there is no direct evidentness²⁰ of the movement, that is, no intuitive cognition of it, but only an abstractive one: "Movement is not known by an intuitive

to explicitly deal only with these five common sensibles (*situs, magnitudo, numerus, figura, motus*), with a special focus on movement.

¹⁹"Et talia precise non cognoscuntur a sensu exteriore sed cum adiutorio virtutis distinctivae quam Aristoteles vocat sensum communem, et etiam patet in *Perspectiva*" (Oresme, *QP* 3.1, 295). Here Oresme seems to follow the Aristotelian tradition by attributing this knowledge to the common sense, but a few lines below, he explicitly attributes this knowledge not to the common sense but to a *discursus* which belongs to the memory, as a *virtus receptiva et distinctiva*: "Sed secundum aut tertium non immediate iudicatur per visum aut sensum communem, sed per discursum" (*QP*, 296).

²⁰Let us recall that the Latin "evidentia" is closer to the French "évidence" than to the English "evidence". To avoid the confusion, Jack Zupko has coined the neologism "evidentness" (the quality of being evident), now largely used by scholars in the field of medieval epistemology. For a conceptual clarification, see Pasnau 2017: 171–98.

cognition since such cognition only deals with the present, but it is known by an abstractive one [...].”²¹ Continuity, which is the main property of movement, is not perceived. It is only a conjecture based on the memory, which allows us to relate two different moments of time. Undoubtedly, such a claim seems to contradict everyday experience: I see that Socrates is running and moving. According to Oresme, in this case the past moment is so close to the present moment (which is seen with evidentness), that it is perceived as if it were present. In other words (even if in this text Oresme does not use such terminology), the *discursus* of the *virtus distinctiva* based on memory is so swift that it is imperceptible. Therefore, even if we do not have perfectly evident knowledge of the movement (that is, infallible knowledge), our conjecture is probable enough to give us quasi-evident knowledge of it.²² As Oresme claims, it is not probable that something could be moved immediately, and it is more probable to give assent to the continuity of movement:

We must say that although the evidentness is not perfect, it is such that it should not be rejected; moreover, we experience that something is now different than it was before, and we experience that this thing was changed. And since it is unlikely that something is suddenly changed, for this reason we must say that this thing was continuously moved.²³

The same position is defended in the *QDA*. Oresme adds a reflection on the notion of place, which was more implicit in the *QP*. The perception of movement is the apprehension of a thing in one particular place (*situs*) and then in another one (*deinde alio*). Therefore, not only do we need to compare two different moments of time, but we also need to compare many bodies at the same time in order to perceive the place, which is a relative concept for the internal senses: “Sight does not perceive movement, except by comparing many visible things, since, as it was said before, place is not perceived except by comparing to other bodies. And it is now clear that movement is not perceived except in relation to different places.”²⁴

²¹ “[...] motus non cognoscitur cognitione intuitive, quia talis cognitio solum est de presenti, sed abstractive” (Oresme, *QP* 3.1, 301). Note that Oresme very rarely uses the terminology of intuitive and abstractive cognition (which is not very common in the Parisian Faculty of Arts in the 1330s and 1340s). We may suppose that he is following a general Scotist view, according to which intuitive knowledge is a certain knowledge of an existing object whereas abstractive knowledge is the knowledge (through memory or imagination) of an object which does not exist at the present moment.

²² On the degrees of evidentness in Oresme’s epistemology, see Grellard 2014b.

²³ “Dicendum est quod licet non sit perfecta evidentia tamen tanta est quod non debet negari; etiam experientia est quod aliquid se habet aliter quam prius et quod est mutatum, et quia non est verisimile quod aliquid mutetur subito, ideo dicendum est quod movebatur continue.” (Oresme, *QP* 3.1, 300–301.) On the question of evidentness and probability, see Grellard 2014a, b.

²⁴ “[...] visus non percipit motum nisi comparando multas res visibiles, quia, ut prius fuit dictum, situs non percipitur nisi in comparatione ad alia corpora. Et iam patet quod motus non percipitur nisi propter diversos situs.” (Oresme, *QDA* 2.15, 232.)

Perception of movement requires a *virtus receptiva* (the memory, or a quasi-memory)²⁵ and a *virtus distinctiva* (the common sense, or more generally, a power of judgment) in order to recall and compare the bodies and the places:

The fifth conclusion is the following: neither movement nor other things of the same kind can be the object of judgment, except by a receptive power, which is like memory. And, they cannot be cognized, except with the help of a discriminative power. It is immediately proved because to judge that something is moved is to perceive that it is now different than it was before. But it is not possible to cognize that it is in another place than it was before except by remembering that earlier it was in another place than it is now. And one cannot judge it to be in another location except by comparing it to an earlier location. And the power that compares two things knows them both.²⁶

From this, we reach the same conclusion as in the *QP*: we cannot expect our perception of movement to be absolutely evident. We only have a natural evidentness (a probable certitude, equivalent to a kind of trust, *bona fides*) based on some conjectures, but this epistemic degree is enough for the purposes of natural philosophy. Once again, Oresme strongly relies on the perspectivist theory. But, interestingly, he surreptitiously adds a new parameter, linked to the role of the memory, but pointing in a new direction: to the problem of habit, and its role in the perceptual process.

13.3.2 *Habit, Perception and Error*

When Oresme examines perception of movement in the *QDA*, he explains that an incorrect evaluation of distance may produce a false perception of a movement: a thing is seen as coming close or going away when it does not move.²⁷ The perception

²⁵ Oresme seems to be a little confused (or at least not totally clear) on this point. Both in *QP* (e.g., 295) and *QDA* (192, 250), the *virtus distinctiva* is identified with Aristotle's common sense. The role of the common sense is to identify the differences between the sensibles (*QDA*, 302: "ponat differentiam inter sensibilia sensuum exteriorum"). But in the perception of movement, there is another faculty (*virtus retentiva*) called a quasi-memory. Oresme explicitly says it is like the memory, but it is not the memory (*QP*, 301). A possible reason why he introduces such an analogy between the *virtus retentiva* and the memory is that both of them are involved with the *discursus* (*QDA*, 302). But whether this quasi-memory is a part of the common sense or another faculty is not clearly stated by Oresme.

²⁶ "Quinta conclusio est quod nec motus nec talia huiusmodi iudicantur nisi a virtute receptiva quae est quasi memoria, nec cognoscuntur nisi cum auxilio virtutis distinctivae. Probatur statim quia iudicare aliquid moveri est percipere quod se habet aliter quam prius ex prima parte, sed non potest cognosci quod est alibi quam prius nisi recolendo quod erat in alibi prius quam nunc, nec potest iudicare esse in alio situ nisi comparando ad situm priorem. Et virtus comparans inter aliqua cognoscit utrumque." (Oresme, *QDA* 2.15, 234.)

²⁷ "Ex hoc sequitur corollarie quod aliquando, si non perpendatur diminutio distantiae, tunc ex motu poterit credi quod res visa crescat, vel diminuatur, si fiat e converso, id est elongetur. Et similiter e converso ex augmentatione rei vel diminutio poterit credi quod res appropinquetur vel elongetur, si imaginetur quod distantia crescat vel minuatur et tamen res quiescet." (Oresme, *QDA* 2.15, 234.)

of a movement that does not occur is caused by our belief, our imagination, and most of all, our habit. Indeed, this kind of error depends both on our opinion (that such a thing cannot grow, so that if its size appears to change, it must be because it is in fact coming closer) and on our habit, linked to our memory, which leads us to perceive this thing in such or such a way since we have already perceived it this way in the past. This corollary is not developed and Oresme does not explain exactly what he means by 'habit' or 'belief'. But this brief remark is convergent with another text of the *Questions on Physics*, which also underlines the role of habit in the perceptual process.

In this text, Oresme examines the classical example of Plato coming from afar. The example was often used in the framework of the debates on the first object of knowledge (whether it is an individual or an universal), but here, Oresme's perspective is quite different. It is linked to the problem of accidental deception:

We answer that Socrates, who thus sees Plato, has a species and a concept of a donkey in the memory habitually, since he saw it elsewhere or heard it spoken of. And for this reason, due to a similitude <produced> by the extension of the lines <of sight>, by movement, or by another accident, a concept is caused in Socrates. This concept is similar to the habitual concept which he has of the donkey, and by which he judges that the thing he sees is a donkey. And this appears through experience or conjecture, that is, because he has been accustomed to see a donkey in this place.²⁸

When a thing is known from afar, it may be confused with another one. If Plato is far from me, I can believe I am seeing a donkey rather than Plato. A part of the explanation relies on the classical perspectivist parameters (that is, the problems caused by distance and/or the medium²⁹). But the perspectivist solution alone cannot explain why we see some indistinct thing which is thought to be a donkey and not a human being. It is necessary to add another cause: habit. I have already seen many times a donkey in the place where Plato is now standing, I have formed a dispositional concept of the donkey, and I have preserved the species of the donkey in my memory. For this reason, if the conditions of sight are inadequate when I perceive Plato, I may interpret the species of Plato in relation to the species of the donkey in my memory. Of course, the error is (hopefully) very brief. Since Plato is continuously coming closer, my vision will become more and more clear, and my false judgment will soon be replaced by a true one.³⁰

Oresme clearly points out that he is not entirely satisfied with the perspectivist account, which neglects some psychological aspects of vision, like habit. Perception

²⁸ "Respondetur quod Sor, qui sic videt Plato<nem>, habet habitualiter speciem et conceptum asini in memoria, quia alias vidit vel audivit loqui. Et ideo propter similitudinem ex protractione linearum vel ex motu vel ex aliquo alio accidente causatur in Sor unus conceptus similis conceptui habituali quem habet de asino, per quem iudicat quod illud quod videt est asinus. Et illud apparet ex experientia vel ex coniectura, scilicet quia consuevit videre asinum in illo loco." (Oresme, *QP* 1.4, 27–28.)

²⁹ "Tertio quaeritur utrum per appropriquationem, per quam fit certitudo vel per quam deponitur error, illa species corrumpatur vel illud iudicium corrumpatur equaliter." (Oresme, *QP* 1.4, 28.)

³⁰ "[...] illud iudicium falsum continue remittitur et aliud verum intenditur" (Oresme, *QP* 1.4, 28).

does not only depend on physiological factors but also includes some psychological (and anthropological) parameters. In the scholastic works, nevertheless, the question is not really developed. But in his later works, Oresme engages again with the problem.

13.4 A Step Towards a Constructive Psychology: The Nature of the Perception in Oresme's Later Works

From 1356 onwards, there is a twofold turn in Oresme's work. First, the mathematical model becomes more and more important. Second, from a psychological point of view, Oresme is more and more careful with the role of the imagination and habit in the perceptive process. This second point is linked to a new trend in Oresme's thought: due to his political duties, he pays greater attention to supernatural phenomena (astrological, magical, etc.) and the false beliefs they may produce. For this reason, the task to explain by natural means the errors of perception becomes central. If the framework of scholastic psychology he developed when he was a Master of Arts is largely maintained, he also develops some new aspects. These new aspects are a step towards a constructive psychology, that is, a psychology in which top-down processes are recognized as central: every perception partly depends on our beliefs, habits, and expectations, and is not only a reaction to a stimulus. In the following, I would like to examine two new aspects of Oresme's later psychology: attention and habit.

13.4.1 Perception as an Activity: The Problem of Attention

The first relevant point Oresme emphasizes much more than in his scholastic works is the activity of the perceiver. The perspectivist doctrines of Alhazen and Witelo remain the general framework of Oresme's psychology in the *Quodlibeta* (1370). He maintains that only the internal sense knows something, and that error occurs in the *virtus interior iudicativa* (*De causis*, 154). This error is still explained by the usual causes: apart from the judgment of the *virtus interior*, he adds the *species reservata*—that is, the influence of memory—the organ, the medium, the sensible, and the distance (*De causis*, 202). Hence, Oresme mixes the perspectivist conditions with his own psychological analyses, which we have already seen. But in these later works, he insists much more on the importance of the activity of the subject and his attention (even if there is not a single word for this concept³¹).

³¹ The closest Latin word to the concept of attention in Oresme is the verb *advertere* and the derivative noun *advertentia*. But we can also find the idea of attention in the distinction of the degrees of clarity of an apprehension (*cognitio, notitia*). See Hatfield 1998: 9–11.

In a previous work, the *De configurationibus* (1356), Oresme had already introduced the idea of attention as a capacity of the soul in order to set aside the internal impediments to its activity (like passions or other thoughts). A soul that is troubled by these passions and thoughts can endeavor to obliterate them, so as to become uniform and able to concentrate on one thing (or on oneself): “The soul, occupied by many thoughts and affected by many passions has been made, as if it were, rough and difform. Therefore, whenever it endeavors to obliterate this sort of difformity by abstraction or turning itself into one thing [...]”³²

In the *Quodlibeta*, the concept of attention is used in a different way: it allows Oresme to emphasize both the activity and the temporality of perception. Indeed, perception is not just the passive reception of a species, but requires an internal judgment, which already has a selective dimension. The process of perception is a temporal one where the grasped object is successively known with more and more detail:

So, too, first, we hear a sound and perhaps fail to recognize it at first impression—in fact, sometimes we are not even sure whether we heard something or not, and only afterwards decide, “I did hear something”; second, we judge that the sound is loud; third, that it is variously figured; fourth that it is a human voice; fifth that it is the sound of angry people who are fighting or playing; and so on for the many circumstances by which we judge that we are hearing a bell or person, or a particular bell or person, or from a particular place etc. And the further the sound is discriminated, or the more its circumstances [are distinguished], the better it is recognized; but also with more time and more discriminating, error becomes more frequent.³³

In this text, Oresme implicitly uses the distinction between the three kinds of judgment in order to show how we begin with a general judgment and finally arrive at a detailed one (*dearticulus*). The attention, that is, the capacity to discriminate the many constituents of a sound (or, *mutatis mutandis*, of an image) successively separates the non-relevant circumstances so as to reach the object.³⁴ Of course such a process is a temporal one; lack of time and precipitation may prevent the attention

³² “[...] anima enim multiplicibus cogitationibus occupata et passionibus affectata facta est quasi aspera et difformis. Quandoque igitur per abstractionem vel conversionem eius ad unum ipsa nititur huiusmodi difformitatem delere [...]” (Oresme, *De Configurationibus* (hereafter *Conf.*), 250). Let us recall that the technical words *difformitas* and *uniformitas* express how a quality is changing in a given time (in a uniform or non uniform way). These concepts are used in the debates on the qualitative change, and in the quasi-mathematics of qualities elaborated in the so-called school of Merton.

³³ “Sic etiam primo auditur sonus et forte prima fronte nescitur qualis, ymo quandoque nescit homo utrum aliquid audiat et post iudicat. ‘Aliquid audio’. 2° iudicat quod est magnus sonus. 3° quod diverso modo figuratur. 4° quod est hominum. 5° quod est hominum iratorum et bellantium vel ludentium et sic de multis circumstantiis per quas iudicatur campana audiri aut homo aut talis campana aut talis homo aut in tali loco et cetera. Et quanto plus dearticulatur sonus seu quanto pluribus circumstantiis tanto magis cognoscitur. Sed etiam tanto in maiori tempore et etiam tanto in dearticulando cadit sepius error.” (Oresme, *De causis*, 172.).

³⁴ At the beginning of the chapter, Oresme recalls: “[...] auditio vera non est sola receptio speciei soni in auribus sed requiritur, sicut in visione, scilicet virtutis interioris iudicium seu advertentia” (Oresme, *De causis*, 166).

from playing its role, thereby producing an error. Clearly, Oresme insists on the processes of recognition and on the role of attention in these processes. But the processes of recognition are not always conscious. Many of them are quasi-mechanical and depend on the habit of both the body and the soul.

13.4.2 A New Account of the Relationship Between Habit, Perception and Error

Oresme devotes large parts of the fourth chapter of the *De causis mirabilium* to the nature of habit, a chapter that becomes a masterpiece of his psychology. Particularly, a habit (*habitus, consuetudo*) is an explanation of the diversity of human aptitudes. This development is an answer to question 137 of the *Quodlibeta* which asks whether the repetition of an act many times can produce a habit, that is, a new quality, either in the body or in the soul (the *habitus* is defined as a natural quality which is difficult to remove).³⁵

If the idea of a habit of the soul does not raise any objection, Oresme considers an objection to the production of corporeal habit: a natural thing like a body cannot be habituated. Against this objection, Oresme maintains the production of habit both in the body and in the soul by examining Aristotle's example of the citharist (who becomes a guitarist in Oresme).³⁶ For Oresme, when the guitarist, by his training, gains a better aptitude to play guitar, a new quality is produced in the hand. Actually, Oresme seems to suggest that two qualities are created together, one in the body, the other in the soul (in this case, the habit seems to help quickly recall the species stored in the memory³⁷). These habits that are created by repetition dispose the organ to react more quickly. For this reason, the perception of the environment and the possibility to react to it are easier and clearer. As Oresme claims, this little movement produces a great effect.³⁸

Now we may wonder whether, as suggested in the *QP*, habit may disturb perception by recalling past perceptions or by disturbing attention. On this point, Oresme seems to have changed his mind: far from being diffused, the perceiver's attention is made faster, and for this reason it is much more imperceptible, in the sense that we are not fully aware of its action of judgment and discrimination.³⁹

³⁵ "[...] qualitas a suo subiecto difficile removetur quia est sibi connaturalis" (Oresme, *De causis*, 338).

³⁶ Aristotle, *EN* 2.1, 1103a30–b10.

³⁷ "[...] sicut manus usitata percutere cordas in guitarna facilius et citius percudit ad cantum seu sonum ad quem est usitata quam ad alium quem vult addiscere de novo vel forte quem est quasi oblita" (Oresme, *De causis*, 292).

³⁸ "Et recole quod prius sepe est dictum quod modicus motus et differentia in principio est maximus in processu" (Oresme, *De causis*, 328).

³⁹ "Unde in sepe legendo eandem litteram membra et organa ad hoc requisite aliquantulum disponuntur qualiter prius non fuerunt" (Oresme, *De causis*, 328).

Hence, Oresme has a very positive conception of the role of habit in the perceptual process. There is only one *caveat*, which concerns the role of habit in the production of false beliefs. Examining the aforesaid objection, Oresme concedes that only a thing capable of repetition (*replicatio*) can acquire such a new quality. A stone cannot be habituated to go upwards. But a natural thing like a power of the soul (*potentia*) can be habituated. On this point, Oresme stays very close to Buridan (who depends on Averroes) by claiming that such a power can even be habituated to the opposite of its natural tendency.⁴⁰ Like Buridan, Oresme claims that repeatedly hearing false speeches can create a habit to assent to superstitious sentences. Buridan relied on this idea in his explanation for how we can be prompted to assent to the tales of old women.⁴¹ Likewise, Oresme explains that young people who are habituated to hear the stories of old women are prompted to see a shadow as a demon or as a fabulous creature. Here the combination of imagination, passion and credulity produces a change in perception.⁴² Unfortunately Oresme does not tell us more about this idea, but he clearly moves away from a strictly perspectivist account of perception and introduces a set of anthropological and cultural factors, thus taking a step towards the elaboration of constructivist psychology. Without giving up the powerful solutions of the Perspectivists to the problem of perceptual errors, he tries hard to go further by adding some different kinds of explanation, not in contradiction, but complementary to Alhazen views. Obviously, Oresme remains deeply in debt to the perspectivist theories.

13.5 Conclusion

These brief considerations on the way Oresme deals with the mechanism of perceptual errors have aimed to explicate the role of non-physiological factors. Even if he relies on the perspectivist theories of Alhazen and Witelo, he also focuses on some other aspects of perception. Particularly, the way he explains certain kinds of error leads him to insist on the roles of habit and settled beliefs. For this reason, he defends a claim which could be labeled as constructivist, relying on “top-down” processes: perception is not a direct and passive phenomenon but relies on inferences and imperceptible mental reasonings (*discursus*) determined by our habits and past experiences stored in the memory.

The kind of proto-constructivism Oresme develops is strongly linked to the importance he gives to the phenomenon of error; we may assume that it is perhaps

⁴⁰ See Zupko 2003: 235–37; Grellard 2014a.

⁴¹ See Grellard 2014a. For a more general discussion on the *vetula*, see Agrimi and Crisciani 1993.

⁴² “Et si dicatur ‘Sor in camera vidit patrem suum mortuum aut et cetera’, respondeo quod hoc est possibile, scilicet quod appareat, quia habet in virtute interiori speciem patris aut alterius et tunc fortiter de eo ymaginatur et cetera, nec ad delata seu presentia ante oculos advertit et sic de baculo aut umbra cum hoc quod de patre cogitate fortiter, apparet sibi quod sit et cetera.” (Oresme, *De causis*, 154.)

related to his reluctance to follow the reliabilist epistemology of many of his Parisian nominalist fellows. Finally, Oresme makes a step towards a conception of error as a conflict between the perceiver's observation and what he can expect in such a situation: the theory of perception should not be separated from a theory of belief.

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Chapter 14

Activity, Judgment, and Recognition in Nicole Oresme's Philosophy of Perception



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Abstract This paper provides complementary evidence for the interpretation offered by Grellard, according to which Oresme defends an active model of perception. It does so by tracing the roots of this model beyond the perspectivist model in geometrical optics and Avicenna to Augustine. The focus of the paper is on the possibility of error in the perceptual process.

14.1 Introduction

Knowledge of external objects was a central topic to late medieval thinkers. It is fair to say that their general approach was informed by two epistemological theses: first, under normal *environmental* conditions, we perceive the world in an accurate way. Second, episodes of perception require the existence of certain *psychological* conditions that explain how we come to perceive certain objects in the world.¹ One such condition is attention, which we can tentatively define here as a kind of spotlight brought to bear upon some, rather than other, objects or aspects of objects.² The first thesis concerns the way information about external things is made available to the perceiving subject in a way that is conducive to cognition, so that failures in this mode of availability lead to perceptual errors. The second thesis, on the other hand,

¹ It is best to remain neutral about whether it is the object in its totality that is perceived, or some aspect(s) of it. This is because of the different levels of description one appeals to, as well as what the mediatory devices called species actually represent—and it is impossible to consider this without focusing on the different philosophical traditions.

² On the different kinds of attention in use in medieval theories of perception, see Silva 2017; Toivanen 2013.

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concerns the way the information made available to the cognitive subject gains cognitive significance by means of the subject's internal cognitive mechanisms and processes. As such, failing to meet these conditions does not entail perceptual error, but simply a failure to perceive what is present to one's perceptual field.

There is a long philosophical tradition concerning the development of these two theses, taken together or in isolation, that only recently attracted sufficient scholarly attention. In his very interesting chapter in this volume, Christophe Grellard paints in broad brushstrokes the way the medieval philosopher Nicole Oresme (ca. 1320–82) addresses these two issues: perceptual error and the role of attention in perceptual experience.³ His overall argument is that perceptual error has great significance for our understanding of medieval theories of perception, and that attention or the activity of the soul in perception can be described in terms of 'constructivist psychology.'⁴ My aim in this paper is twofold: first, to provide complementary evidence for the existence in Oresme of an active model of perception; second, to show that influences on his model go beyond Avicenna and the perspectivist tradition in geometrical optics, which is the focus of Grellard's analysis. I take it that the notion of attention at play in Oresme's model is that found in medieval Augustinian philosophy of perception.⁵ The reason this is important is that understanding the role of attention in perceptual experience requires that one spell out what kind of attention we are talking about and, perhaps more importantly, what motivates its use, i.e. why is attention needed for perception?

14.2 Erring

Medieval philosophical thinking about error is determined by two main theses: the first one is that error takes place in acts of composition/affirmation (or division/negation), rather than in simple cognitive acts of apprehension/grasping. That is true both of acts of the senses and acts of the intellect. In fact, the default view is that external senses *almost* never fail to apprehend their proper objects, and the intellect is *almost* never wrong in its act of grasping a quiddity or essence of a material thing

³There is a third aspect, which is the role of habit in perception and perceptual error. For reasons of space, I cannot discuss this third aspect here. Suffice it to say, I disagree with Grellard in taking Oresme's later developments of the roles of habit and memory in perception as a departure from perspectivist optics, because both these aspects are presupposed in the highest kind of perceptual judgment in Alhacen. In order to recognize something as being of a certain kind and even as the individual it is, one needs to compare incoming sensory data with stored data (a form of memory access) and do so on the basis of salient features (a form of habit), so that the process is swift. On this, see Hatfield 2009; Silva 2017; Sabra 1978; and Smith 2015.

⁴For an overview of the problems for perception that arise from failing to meet these conditions, see Silva and Toivanen 2019.

⁵The topic of activity of perception and the psychological phenomenon of attention in medieval philosophy has recently received ample scholarly attention: see e.g. Gannon 1956; Perler 2003; Pasnau 1997; Leijenhorst 2007; Silva and Toivanen 2010; Silva 2012, 2014; Toivanen 2013.

(that is its proper object).⁶ But the similarities between perceptual and intellectual error end here. In the case of the senses, this failure to fail is due to the limited range of properties that constitute the proper objects of the particular senses, for instance colour as the per se sensible for the sense modality of sight. Either the triggering stimulus is present to actualize the power's capacity for seeing or it is not: so, whenever there is a coloured thing present in my field of vision, I cannot, under normal environmental conditions, fail to see that object. Things get more complicated the more complex these sense objects become, as in the cases of common sensibles (size, shape, motion, etc.) and accidental sensibles (those things in which the per se sensibles exist, like Socrates in which the whiteness I see exists). I may identify the coloured thing as something other than what it is (a cat, say, instead of a dog); however, a failure to *identify* the thing which is coloured is not a failure in a sense modality, but a malfunction of the internal processing capacities that medieval thinkers called internal senses—common sense, imagination, phantasy, memory, estimative power, etc.

The intellect, on the other hand, is characterized by the capacity to identify the essential properties of a thing once presented with the multiplicity of sensory imagery of that thing or that kind of thing in the form of phantasms. That capacity of the intellect is a primitive feature of the theory, meaning that the intellect is so constituted as to be able to grasp these essences, despite what seems to be a poverty of sensory stimuli, because it is an immaterial entity directly created by God with that inherent capacity. But, as the topic of this paper is perceptual error, we can avoid this issue altogether.

The second thesis to which most, if not all, medieval thinkers subscribed with respect to perceptual error is that error is possible if the transmission of information from the object to the cognitive subject takes place under sub-optimal conditions. Information from and about the external thing takes the form of 'species', here signifying appearances or similitudes of objects or sensible properties of objects.⁷ This is not the place to elaborate on the nature of these species; it suffices to say that by the mid-thirteenth century (and thus by Oresme's time), species were the standard way of explaining how sensory information is made available to a perceiver while safeguarding the required distance between object and sense organ stipulated by Aristotle.⁸ According to Oresme, the species of colour, for instance, are generated by the object and "are multiplied in the medium by a certain spiritual power or

⁶On the senses, see Aristotle, *de An.* 3.3, 428b18; *Metaph.* 3.5, 1010b18.

⁷"Species is a certain quality similar to an object which represents it naturally" (Nicole Oresme, *Questiones de anima* 3.10, 101–2). In what follows, I use both Marshall's and Patar's editions, referred to respectively as *Questiones de anima* and *De anima*.

⁸One of the clearest presentations of Oresme's view on species can be found in his *Questiones super quatuor libros meteororum*, which is edited by S. C. McCluskey, Jr. in *Nicole Oresme on Light, Color, and the Rainbow: An Edition and Translation, with Introduction and Critical Notes, of Part of Book Three of his 'Questiones super quatuor libros meteororum'*, PhD Dissertation, University of Wisconsin-Madison, 1974b.

influence”⁹; this multiplication takes the form of “spherical radiation about the object,” just as fire warms equally all men standing in a circle around it.¹⁰ The idea, simply put, is that species radiate in straight lines from each point of the surface of the object in all directions. From an ontological point of view, these species are corporeal entities with spiritual being, meaning that they exist in corporeal media (air, water) without imparting that media with the qualitative feature they represent.¹¹ Failure in the environmental conditions (medium, sense organs, distance)¹² of transmission of species leads to a failure in the exercise of the cognitive operations and thus to cognitive error. For instance, as Oresme notes,

if the eye is in a rarer medium and the object in a denser medium, the object appears nearer to the vision than if seen through a uniform medium. [... On the other hand,] when the eye is in a denser medium and the object in a rarer medium, the object appears farther from sight than if the medium were uniform.¹³

The same happens in all sorts of cases, like that of the stick half immersed in water, which appears to be broken or bent, or of a coin (*denarius*) fully immersed in water, which appears to be larger than it is. The only way a system designed for epistemic success can err is when “a breakdown in the system” has taken place,¹⁴ and, in this Aristotelian framework, changes in the conditions of the medium constitute precisely that. In the presence of standard conditions, we cannot fail to perceive how things are because the contents of those experiences depend on the appropriate grasp of our sense modalities and the objective existence in things of those perceived properties.¹⁵ Aristotelian metaphysics trumps Theaetetus’ skepticism on the value of perception, so much so that the problem of error—even perceptual error—remains marginal for Aristotle.¹⁶

That is true for the simple acts of cognition, but the major source of error is the act of composition and thus judgement. The kind of judgment I have in mind as the common medieval usage is that whereby one judges that something has a certain property, i.e. of the form x is y (or x is not y). It is important to note that this conception of judgment is in no way dependent on language and thus has no propositional form, despite the fact that we need language to describe it. To some extent, all

⁹ *Questiones super quatuor libros metereorum* 12.57–59, 130.

¹⁰ “Omne agens multiplicat virtutem suam prope se orbiculariter” (Oresme, *Questiones super quatuor libros metereorum* 13.108–9, 170). The example and application to the generation of the species is Oresme’s.

¹¹ *Questiones de anima* 2.18, 168–71.

¹² *Questiones de anima* 2.10, 293.

¹³ *Questiones super quatuor libros metereorum* 12, 153.

¹⁴ Evans 1998: 122.

¹⁵ A good example in Oresme: the colors of the rainbow, which are seen as being in the sky but are not there. The cause of the error about a proper sensible is the less than adequate condition of the medium (the air and water, in the form of raindrops). See McCluskey 1974b: 72, and *Questiones super quatuor libros metereorum* 20.212–16.

¹⁶ On this, see Keeler 1934: 8–9, 22–40. On a similar attitude in medieval thinkers, see Silva and Toivanen 2019.

medieval epistemologists would accept that perceptual judgment is part of a perceptual experience: the common sense judges that x is y whenever it brings together the sensible properties acquired by the individual external senses. If one were to take perceptual judgments as *the* sign of activity of the soul in perception, then all medieval epistemologists would accept the view that the soul is active in perception. If that were the case, however, it would be unclear of what philosophical interest the question of activity of perception would have. A different way is to argue that the soul is active because the reception of sensory information from the external world is necessary, but not sufficient, for perception, including perceptual discrimination. On this account, the soul must *attend* to the reception of this sensory information for it to gain cognitive significance. Oresme follows this path, in particular when discussing the problem of the agent sense in his *Questiones de anima*.

Attention becomes the key feature to explain how the soul is active in perception. There is, however, a minor concern with this account, enough perhaps to curb our enthusiasm: is attention a primitive feature that is self-caused, or is it a psychological mechanism that explains a reaction to incoming stimuli? If the latter, it seems that the soul is not active, but simply reactive: when I kick a plastic ball, the form of my foot is pressed upon its structure—and thus one could say that the ball actively takes on that shape—and bounces forward. Such activities are actualizations of potential states caused by the external thing rather than originating in the ball itself. Again, this is not philosophically very interesting. The way out is to argue that the soul is active in perception not because (a) it produces a judgment about material objects and their sensible (visible, tactile, etc.) properties, but because (b) it is the fact that the soul is active that such perceptual judgments can be produced and indeed are so produced. In medieval terms, this could be expressed as follows: according to (a), an act of the external senses is the cause of the act of the internal sense; whereas according to (b), the act of the internal sense is what makes the act of the external senses cognitively significant. Nicole Oresme argues for (b) and, while operating in a largely Aristotelian framework, he does so by giving up two central Aristotelian epistemological theses:

- (T₁) perceptual acts are caused by external objects (by means of incoming sensory information);
- (T₂) the content of a perceptual act is determined solely by the incoming sensory information.

Before continuing, let me point out, firstly, that nothing in my argument depends on the clause “by means of incoming sensory information” in T₁. I included it in order to make the relation with T₂ more immediate. To explain how this works without that clause would require too much space. Secondly, there may be some disagreement about whether these two theses (or one of them) represents the view of any medieval Aristotelian, without qualification. I accept this objection, but I would still argue that it expresses something essential to the Aristotelian model of perception, however this may be qualified.

14.3 Attending

In the previous section, I suggested a number of alternative proposals concerning the ways in which the activity of the soul can be found in perception. Some of these are not active in a strong sense, i.e. as characterizing cognitive acts that are not caused by their subject. According to that way of understanding activity, acts of judgment are active in a way that is neither original nor significant. Instead, I proposed that we take cognitive operations of the soul as active in a strong sense if these acts are caused by the soul *and* their contents are not fully determined by the incoming sensory information. That is the view we find in Nicole Oresme.

As Grellard notes in his contribution, attention gains particular traction in Oresme because he understands perception as a cooperation between external and internal senses, which is to say that only when the information is received in the internal sense can we say that the external thing is actually perceived. This is so because perceptual experience necessarily includes perceptual judgment, which only the internal sense can produce (more on this below). The real motivation for this idea is found in the thesis that cognitive acts cannot be caused in the same way as other natural acts. Oresme quotes Aristotle's *De anima* 2.2 and 2.4 as evidence for his claim that the soul is the cause of all vital operations, among which perception is to be included.¹⁷ He further connects this principle of vital activity with the fact that perception is an immanent action; that is to say, the act of the perceiver starts and ends *in* the perceiver.¹⁸ As a result, Oresme goes on to conclude:

the sense is the agent with respect to sensation. This is proved by the fact that, as said before, it does not suffice that the species is [received] in the organ, but sensation requires that the sense turns [to the object]. And such turning is to act; and thus, in sensing, it reasons, because, as it has been said, to reason is to act.¹⁹

The central thesis in this model is a clear distinction between the passive aspect of sensation, which consists in the reception of the incoming sensible species in the organ, and the soul's active act of turning to the object: together they constitute perception. Proof of this is that when the species is received in the sense organ, but the sense power is distracted with another thing, there is no perception of the thing causing the species. Further proof of this activity, Oresme argues, is that the sense gets tired (*fatigatur*) from extended and intense activity, which would not be the case if it were simply passive.²⁰ (Oresme notes that this fatigue is not due to the

¹⁷“dicit quod anima est causa agens respectu omnium operacionum vitalium” (*Questiones de anima* 2.9, 272).

¹⁸“non dicitur actio immanens nisi quia est in agente” (*Questiones de anima* 2.9, 273).

¹⁹“sensus est agens respectu sensationis. Probatur quia, ut dictum est, non sufficit quod species sit in organo, sed cum hoc requiritur quod sensus advertat quando est sensacio. Et taliter advertere est agere; et eciam senciendo discurrit, ut dictum est, et discurrere est agere.” (*Questiones de anima* 2.9, 282.)

²⁰*Questiones de anima* 2.9, 277. Also *De anima* 2.8, 179, where he calls the sense ‘virtus fatigabilis’.

operation proper to the cognitive power, but to the concomitant activity, like the moving of the corporeal spirits.²¹)

Oresme's approach gives weight to sense and object as efficient contributing causes,²² but with an emphasis on the productive nature of the soul:

I say that sense receives the species from the sensible [thing] and by means of it produces [an act of] sensation in itself—in the same way as a heavy thing receives, from its generator, its weight, by means of which it moves itself.²³

What sense then does is to 'act sensation', which we could express in a less awkward way as 'bringing about a perceptual experience' from the species made or caused by the object.²⁴ But in fact, it means something stronger. In *De anima* 2.9, 279 Oresme claims that the internal representation of the external thing, which he calls the sensible form, is not distinct from the perceptual act. What this means, then, is that the distinction is more radical than assumed: the sense *organ* is acted upon by the external thing impressing the sensible species in it and the sense *power* is acted upon by itself in so far as it produces a corresponding internal sensible form. That is why Oresme notes that there are two ways in which the sense is acted upon (*pati*): as the ultimate subject receiving something from an agent, it receives the species from the object; and on account of which that reception is made, which is for the sense to be acted upon by itself in sensing by producing and receiving the sensible form.²⁵ This self-action is possible because the soul is not the full cause, but co-cause, the other cause being the reception of the species in the organ. The senses cannot be completely active in perception: first, were it the case, one would be able to sense at will, without a corresponding object in the extra-mental world; second, sensation is a change of state, meaning that one moves from the non-exercise of the operation (e.g. seeing) to its exercise; third, sensation cannot entail extramission because we do not act upon things in the world, like stars, simply by turning our gaze to them. The species, which is in the outer part of the sense organ, is produced by the object and not by the power.²⁶

Another way of saying this is that the sense is the principal cause and the reception of the species in the organ is the instrumental cause. If the sense—or the sensitive soul—were not active, the species could never be found in the internal sense, the operation of which (as will be seen below) is necessary for perception, because of the way species propagate: in straight lines. Whereas that mode of propagation is

²¹ *De anima* 2.8, 180.

²² "Igitur sensacio principalius dependet ab anima quam ab obiecto efficiente, quamvis utrumque concurrat" (*Questiones de anima* 2.9, 283).

²³ "dico quod sensus recipit a sensibili speciem et, mediante ipsa, in semetipso agit sensacionem—sicut grave a generante recipit gravitatem mediante qua postead movet se ipsum" (*Questiones de anima* 2.9, 283).

²⁴ "Et tunc sensus agit sensacionem vel facit speciem factam vel causatam a sensibili esse sensacionem" (*De anima* 2.9, 284).

²⁵ *Questiones de anima* 2.9, 279.

²⁶ *De anima* 2.9, 187.

appropriate to the medium, it is not proper to the twisted pathway (*per lineam tortuosam*) connecting the sense organs and the brain, where the internal sense is located.²⁷ Only the activity of the sensitive soul producing a representation of the thing impressed upon its sense organ, which is dependent on but not caused by the reception of the species, makes this transmission and thus perception possible.

To conclude this section: Oresme's view is that the object moves the sense organ (*sensibile movet sensum*), qua instrumental cause, and the soul causes the act of sensation (*sensus agit sensationem*), qua primary cause.²⁸ The sense acts by making "the species caused by the sensible thing to be sensation."²⁹ Oresme offers two reasons why the soul/sense must be active: first, the soul must be active because that which is active is superior and nobler (*nobilius*) than that which is passive³⁰; second, cognitive (including perceptual) acts are vital acts and immanent operations.³¹ The nobility of a substance is expressed in its properties and operations. This means that the soul must be the efficient cause (*causa agens*) of all vital operations, including the cognitive ones, rather than being causally subjected to the action of a material external thing. Both these theses are stock arguments in medieval Augustinian philosophy of perception, as I have argued elsewhere.³²

14.4 Processing

In the previous section, the focus was on the cause of perceptual acts, rather than on the nature of the process itself. Processing of sensory information does not of itself entail activity in the strong sense, because that would be to confuse performing an operation and being the cause of that operation: the windmill grinds the grain, but that action is caused by the wind, not by the mill itself. Likewise, sense powers such as the internal sense faculties—e.g. the common sense—operate on the basis of received sensory information. In order for an internal representation of an external thing to come to exist, the species must be transmitted and received in the organ in a way that conforms to basic geometrical rules:

for such representation it is necessary that pyramids are continually erected upon the eye, since for vision the arrangement of species or rays in the eye must be such that just as that which is seen is disposed outside, in like manner it is represented inside.³³

²⁷ *Questiones de anima* 2.9, 281–82.

²⁸ *Questiones de anima* 2.9, 283–84.

²⁹ "Et tunc sensus agit sensationem vel facit speciem factam vel causatam a sensibili esse sensationem" (*De anima* 2.9, 189).

³⁰ *De anima* 2.8, 181.

³¹ *De anima* 2.8, 183.

³² Silva 2014, 2017, 2018, 2019, 2020; Silva and Toivanen 2019. Both these aspects can be found in authors such as Henry of Ghent, Peter John Olivi, Durandus of St. Pourçain, Roger Marston, etc.

³³ *Questiones super quatuor libros metereorum* 13, 177.

Following the model of geometrical optics of the perspectivists, especially Alhacen in his *De aspectibus*, Oresme argues that visual perception is defined by a visual pyramid with the vertex in the center of the eye and the base terminating at the extremes of the surface of the visible object.³⁴ This guarantees that everything seen is seen within that pyramid in a way that bears a one to one representation of the external thing. In explaining this, Oresme also follows Roger Bacon's version of the intromission theory of vision, that is, his doctrine of the multiplication of species. According to this theory, objects in the world issue species of their sensible properties. These properties can be perceived either per se, or by accident.

Largely inspired by Alhacen, Oresme argues for a distinction between those things that we perceive by external sense alone, its proper objects, like colour and light for sight, and those that require some form of reasoning (*discursus*), which are all other properties of objects, traditionally called the 'common sensibles'. These features of things, like place, rest, motion, etc., are, according to Oresme, accidental sensibles in that they are not the object of one sense modality only, they are not perceived without reasoning, and the object does not issue forth species of them.³⁵ These properties are perceived accidentally because they are not perceived by means of their proper species.³⁶ Instead, they are perceived *together with* the proper sensibles: when perceiving a white thing, we perceive its whiteness together with, rather than in isolation from, its shape, size, location, distance, etc.³⁷

Oresme is particularly aware that material objects may appear in ways that do not correspond to the way they are in the world. One of the reasons for this, that we have briefly considered already, is due to problems in the environmental conditions, for instance as when there is a red glass between us and a wall, leading us to perceive the wall as red. In this case, it is true that we perceive red; the error is that we judge the red to be where it is not.³⁸ Another cause of perceptual error is the productive nature of the internal senses, namely the faculty of imagination, directly or by means of the action of bodily humours. Oresme illustrates this with the case of a person who spins around: when she stops, the objects around her seem to continue to spin despite her remaining still. Something similar happens when one sees something as the result of being in an altered state, due to an excess of love or madness. Other cases are the result of faulty processing of information, like when one confuses the

³⁴ "omnis res, quantum ad longitudinem et latitudinem de qua nunc loquimur, videtur sub pyramide cuius basis est res visa et vertex est in oculo secundum aliquem angulum" (*De anima* 2.13, 217).

³⁵ *Questiones de anima* 2.11, 308–10. Oresme is aware and is explicit that this conception of *sensibile per accidens* is not that of Aristotle, but is found in Perspectivist treatises. See *De anima* 2.12, 208.

³⁶ "debet dici sensibles per accidens quod non potest cognosci nisi per discursum quia tale non immediate cognoscitur per suam speciem" (*Questiones de anima* 2.11, 310).

³⁷ "dico quod non oportet quod figura agat in sensum sed <quod> color agit speciem figuratam vel album agit speciem albam representative et figuratam magnam" (*Questiones de anima* 2.14, 349). According to Alhacen, there are twenty such sensibles, which include the common sensibles from Aristotle.

³⁸ *De anima* 2.10, 195.

size of objects in the visual field by not including distance in the perceptual judgment. That is the case when different objects, such as a wolf and a forest, are seen under an equal angle and thus are incorrectly judged to be of the same size.³⁹

What this reveals is that simple reception of sensible species in the sense organs cannot be enough for sensation, and furthermore that perception does not take place in the external but rather in the internal sense. In fact,

the external sense does not cognize, but the internal [does so] by means of the external.⁴⁰

Those two acts are truly inseparable (*inseparabilia*) because there is no operation of one without the act of the other.⁴¹ Oresme makes this claim even more compelling by noting that what is present to the external senses is a necessary but not sufficient condition in the process of producing a complex judgement about an external sensible object that is either true or false.⁴²

Oresme emphasizes the complex nature of sensitive cognition, meaning that it always has the form of a judgment such as *x* is *y*. But there are different levels of judgment. Oresme remarks that a perceptual judgment can have as its predicate a general form, as ‘something is coloured’, or a specific form, as ‘something is blue’, or an even more specific form, as ‘something is of such a hue of green’.⁴³ With the exception of the first kind, i.e. perception of a general form that Oresme also calls a ‘confused’ (*confuso*) universal, the two determinate kinds of perceptual content—‘this is white’ and ‘this is of that shade of white’—require the activity of the reasoning internal sense.⁴⁴ About the first kind, which is mostly free from error, Oresme simply says that it is done without reasoning and by the external sense. This is slightly confusing because he has just denied that there can be perception by the external sense only. What he probably means is that this is the only kind of perception whose content is fully determined by the received information. For all other cases, Oresme thinks that perceptual judgment is produced on the basis of information immediately accessible to—i.e. received in—the sense organ, in addition to information that is not immediately available in this way (“background knowledge,”

³⁹ *Questiones super quatuor libros metereorum* 19.309–14, 254.

⁴⁰ “sensus exterior non cognoscit sed interior mediante exteriori” (*Questiones de anima* 2.10, 288).

⁴¹ *De anima* 2.10, 192.

⁴² “visum est quoniam nulla sensacio est sine iudicio complexo vero aut falso” (*Questiones de anima* 2.10, 295).

⁴³ *Questiones de anima* 2.10, 289. It is interesting to note that Oresme is very precise when describing the subject of that property as something (*aliquid*), rather than a thing of a given kind, like human being or animal.

⁴⁴ “Et istud iudicium non fit solo sensu exteriori, sed cum hoc concurrat sensus interior discursivus” (*De anima* 2.12, 207). Reasoning and discursivity here should not be taken in the sense of what we could call ‘strong rationality’, that is to say the processing of information that uses conceptual resources, which are only available for beings that have the power of reason. Instead, reasoning and discursivity here mean the use of processes that resemble drawing consequences and inferences (or even associating) but do not depend on conceptual resources. We could call this ‘weak rationality’. The difference between weak and strong rationality does not apply only to the human-animal divide, but also to different levels of processing information in the human cognitive system.

as we would nowadays say). This requires supplementary work by the discriminative power (*virtus distinctiva*), which proceeds by association (*per collacionem*) and comparison (*per comparacionem*) of different sensible features,⁴⁵ both present to the senses and previously stored. This comparison allows the judgment not only that something is *x* but also that it is different from *y*.⁴⁶

I propose to illustrate this with one example. I am looking at the ceiling of the Leonine room in the Vatican Library, where I am writing these words. There is an array of colours and geometrical figures, as well as a panel with three angels holding a book. I can focus on any of the figures at will, paying close attention to small details, like the drape covering one of the angels, or the background colour, in this case blue, etc. The question is whether what I consciously see is determined only by what there is in the ceiling present to my visual field. One answer is to say yes, because it is the fact that certain colours, shapes, etc. are present to me in the way they are—with the environmental conditions being unremarkable, such that there is illumination, my eyes are healthy, and the distance to the ceiling is appropriate—that I cannot fail to perceive the way I do. Oresme makes this point clear when he notes that

vision judges colours to be there; therefore, they are truly there. The antecedent is apparent; and the consequence is valid, for otherwise vision would be deceived, which contradicts Aristotle [who] says in the second book of *De anima* that vision is not deceived, at least [not] in judging what is colour, although it would be deceived in judging what is white or black.⁴⁷

The sense modality of sight does not fail to perceive under optimal conditions its proper objects, colour and light (*lumen* in the air and *lux* at the source), although it may fail to perceive accurately—i.e. to identify—the thing to which that sensible feature belongs: what thing that white (thing) is.⁴⁸ On the other hand, Oresme makes it clear that even in the case that one is deceived about the origin of the sound, it is still true that a sound is heard.⁴⁹

But that is the minimal account of visual perception, that which has light and colour as its proper objects. In addition, when we perceive things like this ceiling that I am currently looking at, what I see must be determined by what I am already acquainted with, so that I can report that “I see an angel with blue wings and blond curly hair, partially covered with a yellow drape.” I can do it only because I know, from previous experiences, what an angel is, what wings are, what the colour blue looks like, etc. So, it does make sense to argue, like Alhacen does and then Oresme,

⁴⁵ *Questiones de anima* 2.10, 290.

⁴⁶ *De anima* 2.12, 207.

⁴⁷ *Questiones super quatuor libros metereorum* 20, 261.

⁴⁸ Oresme argues for two important theses about the proper objects of sight, light and colour: first, that colour is not simply the effect of the action of light upon an opaque body, but the result of “the mutual interaction of primary qualities”; second, that both light and colour are seen. See Oresme, *Questiones super quatuor libros metereorum* 20, 262–70.

⁴⁹ “Nec valet si obicitur de tinitu aurium, quia in rei veritate est ibi quidam sonus, licet non [sit] talis qualis apparet aut tantus” (*Questiones de anima* 2.10, 292).

that the received sensory information is just part of the content of the visual experience I am having. Perception conceived of as *limited to what is made immediately present to us at a given time* ignores other perceptual capacities that we possess, namely the capacity to recognize objects. Recognition is nothing but the capacity to identify a given object or property as something of which we have a prior experience and thus to have access to that knowledge about the object in question. Recognition is a central feature of perspectivist optics, and there are many reasons why such an ability is an essential part of normal human perceptual processes. One of them is that the swiftness of perception is made faster, if we can apply what we know—and remember—to the incoming sensory information, without having to go again and again (upon any instance of encountering that object) through the process of apprehending its relevant properties.

Grellard's suggestion is precisely that, according to Oresme, our visual perceptions include more than meets the eye (pun intended). What we see is *not* limited to the objects *as they affect us*, but memory and habit have a role to play in how we perceive the world. I certainly agree with him. One example of this extra-received information is the perception of distance, as distance between objects in the visual field is not one of the sensible properties that are available to us, at least from the immediate perspective of visual perception.⁵⁰ Another is the perception of motion, on which Grellard focuses his attention. Oresme explicitly considers the perspectivist model an improvement with respect to the Aristotelian one on the issue when he remarks:

It seems hence that motion is perceived by sight, not by itself, but mediately and almost by accident, just as [stated] in the beginning of the third [book] of *Perspective*. And if it is said that Aristotle calls it a common sensible and per se sensible, <it must be said> that he spoke in a general and coarse-grained way.⁵¹

Oresme takes perception in general to be more accurate if that which is perceived is already known. For instance, in order to know whether something has moved, we need to know that it was first at rest and from this judge that it is no longer at rest but in motion. This cannot be the function of sight, which can, on its own, see *x* or *y*, but not their motion. That is why Oresme, when explaining the perception of motion, talks of the sensitive soul in terms of a receptive power that retains different past moments of the continuous motion of a thing and the power of discriminating between these moments and the present place of that thing, resulting in a judgment

⁵⁰ On the perception of distance in perspectivist optics, see Silva 2017: 56–58.

⁵¹ “Patet ergo quod motus percipitur per visum, non tamen per se, sed mediante et quasi per accidens, sicut <patet> in principio tertii *Perspective*. Et si dicatur quod Aristoteles dicit quod est sensibile commune et sensibile per se, <dicendum> quod loquebatur in generali et grosse.” (Nicole Oresme, *Physics*, in *Nicolaus Oresmes Kommentar zur Physik des Aristoteles*, ed. S. Kirschner (Stuttgart: Steiner, 1997), 3.1, 296.) There is also a new edition by S. Caroti et al., Nicole Oresme, *Questiones super Physicam (Books I–VII)* (Leiden: Brill, 2013).

that the thing has moved.⁵² For that “judging by means of sight” (*iudicatur mediante visu*), one needs the distinctive and judging power (*virtus distinctiva et iudicativa*).⁵³

Furthermore, in the perception of quantity, one needs to possess and make use of a certain standard or yardstick to measure that quantity, which is akin to saying that I measure this wall as being four metres long—metre being my measure of choice. In that sense, one is more prone to err precisely because of the complex nature of this judgment, composing/dividing or comparing, as in the case of the illusion of perceiving that trees on the shore are moving from the perspective of one aboard a moving boat. We do not perceive motion if we look at those things that move with us; instead, to perceive motion we need to compare visible things and realize that they occupy different places at different times—but the time, just as the distance, must be moderate.⁵⁴ In some cases, the perception is of what moves fast and thus requires just the discriminative power together with short-term memory, which is the work of *phantasia*. In other cases, still, memory properly has to play a role, like the case of the motion of the sun: as the movement takes so long that the species disappear from the common sense, memory (*reminiscentia*) must retain those species and reason must judge, on their basis, *that the sun has moved*.⁵⁵ Finally, there are some long-term motions that are not properly called perception but knowledge of motion, like the motion of the heavens, which is performed by the intellect.⁵⁶ This last kind of judgment is properly human, i.e. *non potest percipi a brutis* (cannot be perceived by brute animals).

14.5 Conclusion

From the examples just presented in the previous section and the analysis provided there and in Grellard's chapter, it seems safe to conclude that for Oresme our perceptual experiences (of the specific kind, at least) are not, content-wise, fully determined by the information we receive in the sense organs from external objects. That being the case, the causal process between object and perceiver is not sufficient *on its own* to explain how and what—of the things present to our perceptual field—we

⁵² *De anima* 2.15, 234. Grellard (p. 231, footnote 25) attributes a certain confusion to Oresme, but it seems to me that this apparent confusion can be explained away by considering perception—in a very Augustinian fashion—from the point of the soul, rather than from the point of view of powers. Perceptual powers are functions of one subject, which is the sensitive soul. The soul receives and retains by one power and discriminates and judges by another.

⁵³ “Et talia precise non cognoscuntur a sensu exteriori, sed cum adiutorio virtute distinctivae, quam Aristoteles vocat sensum communem, et etiam patet in *Perspectiva*” (Nicole Oresme, *Physics* 3.1, 294).

⁵⁴ *De anima* 2.15, 232–33.

⁵⁵ Nicole Oresme, *Physics* 3.1, 302–3. On the different degrees of certitude attainable by these modes of cognition, see Celeyrette 2007.

⁵⁶ *De anima* 2.15, 235–36.

actually perceive. In order to explain it, we need to introduce the way we attend to these objects, as we have examined above, and also the way we process sensory information. On this latter aspect, it is worthwhile to point out again two significant features in Oresme's account, which he explicitly associates with Alhacen: the first is that the more general something is, the more immediate its perception is—the levels of specification of the content of perceptual acts are progressive and increasingly time-consuming; this is so because specification (or determination) requires more reasoning than the confused universal. The second feature is that these modes of apprehension and specification by 'reasoning' are common to all beings capable of perception.⁵⁷ What this ultimately means is that the discriminative power, which performs these higher order perceptual processes, is not of a rational kind, as it is found throughout the animal kind. Together, these two aspects show that Oresme's model brings together elements from the Augustinian and the perspectivist theories of perception and that his is a strong active-perception theory.⁵⁸

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⁵⁷ "et hoc est universale in omnibus animalibus habentibus sensus" (*Questiones de anima* 2.10, 291).

⁵⁸ The research for this paper has been funded by the European Research Council under the Starting grant agreement n. 637747 for the project *Rationality in Perception: Transformations of Mind and Cognition 1250–1550*.

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